CONTENTS

DECEMBER, 1924

Honey Markets		752-753
Editorials		757-759
Localization of Queen-rearing	W. J. Nolan	760-765
Large Scale Honey Production	Dora Stuart	765-769
Adventures with Honey Plants	Leslie Burr	769-772
A Live Beekeepers' Association	E. G. Carr	773-775
Falling Leaves	J. E. Crane	776-777
Architecture of Honey Comb	W. B. Wallace	777-778
Building up Colonies in Winter	E. D. Crowl	778-779
Packages or Wintering	L. T. Leach	779
Italian Bees in Brazil	Emilio Schenk	780-781
Comb Honey More Profitable	F. W. Lesser	782
Beekeeping in New Zealand	John Unsworth	782
Siftings	J. E. Crane	783
From North, East, West and South		784-790
Heads of Grain from Different Fields		791-795
Just News		796
Bees, Men and Things		797
Gleaned by Asking	Geo. S. Demuth	798-800
A. I. Root's Story of His Own Life		801-807
Sour Honey Department		809-810

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H. H. Root, Assistant Editor
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HONEY MARKETS

U. S. GOVERNMENT MARKET REPORT.

Information from Producing Areas (First Half of November).

CALIFORNIA POINTS: Southern California.—A little rain has fallen lately in some sections; others report no rain yet. The colonies are generally in fair condition, with plenty of stores. One small carlot white orange reported at 14c per lb. Most honey in the Imperial Valley is out of the producers' hands. A few ton lots of light amber alfalfa have sold lately at 8c per lb. Some shipments have been made of this flavor recently to Germany. Beeswax was sold at 21-25c per lb. Northern California.—Bees mostly packed for winter. They are in excellent shape, due to long late flow from river oaks. Early rains put an end to the activities of bees and placed honey plants in such good shape that the 1925 season should be the best in years. Demand has been good, and many beekeepers, especially the smaller ones, are sold out. Large lots white thistle quoted at 8½-10c, single 60s, 11c per lb.; light amber, ton lots, 8c; single 60s, 10c; amber, ton lots, 7c per lb.

PACIFIC NORTHWEST. — Comb honey, which is scarce, is in good demand; extracted honey, of a quality above the average, is moving rather slowly. Light colored extracted has sold in ton lots at 9¾-10½c per lb.; single 60s up to 12½c; small pails, 12-16c per lb. One car light amber sold at 10c per lb.; 1 car sold recently at 9¼c per lb. for 60s, 10c per lb. for 10s, and 11c per lb. for 5-lb. cans.

INTERMOUNTAIN REGION. — Bees are mostly packed for winter, and are generally in good shape, although feeding has been necessary in some sections. Snow has fallen already, and heavy snow in the mountains should provide ample moisture for irrigation in 1925. Condition of honey plants spotted, as some regions have been dry, while others have had good rains. Honey has not moved quiet as briskly in the past two weeks as during the preceding month. Carlot demand for comb rather slow, for extracted good. Several carlots of white sweet clover and alfalfa have sold at 9c and 9½c per lb.; two at 8½c and one at 10c; ton lots, 8-11c; single 60s, 10-13½c; small pails, 10-14c per lb. Carlots of light amber have sold at 7½-9c per lb. Comb honey, white sweet clover and alfalfa, has moved in carlots at $4.50-5.00 per 24-section case, for fancy, and $4.00-4.50 per case for choice. Three carlots, all grades, have sold for a flat price of $4.40 per case. Less carlot sales reported of No. 1 at $4.00 per case, No. 2, $3.70. Sales of beeswax reported at 22-23c per lb.

NEW MEXICO.—Owing to the late fall, bees are much stronger than they were six weeks ago, and they may go into winter strong in bees as well as heavy in honey. Weather very dry. Most honey has been sold.

ARIZONA. — Brood-rearing has stopped. Weather remains very dry, and as it is warm, bees are consuming stores very rapidly. Some are starving and considerable feeding is being done. Few sales light amber extracted in single 60s reported at 8½-11c per lb.

TEXAS.—Floral conditions unusually good for the season of year. Colonies are generally going into winter strong in bees and with ample stores, in better condition than for many years past. Demand has improved, and the honey supply is rapidly becoming exhausted. Sales reported as follows: Extracted light amber, 60-lb. cans, wide range, 8-12c per lb.; ton lots, 10c; small pails, 12-13½c; dark, 60-lb. cans 7-9c; small pails, 11-12c; bulk comb, light amber, 6/10s, 14-15c; 12/5s, 15c; 20/3s, 16c per lb. Beeswax, light, 22-26c per lb.; dark 20-23c.

PLAINS AREA.—Condition of bees and young plants is above normal and prospects for next year are excellent. In some sections fall flow was short and bees will have to be fed, but in general stores are ample. Honey is moving well, and most small beekeepers are sold out. One carlot white clover reported sold at 9½c per lb.; 2 cars light amber at 10c; ton lots, white, 10-11c; light amber, 10-10¾c; small pails, white, 11-12½c; some, 15c per lb. No. 1 white clover comb has sold at the wide range of $4.00-5.50 per case, mostly around $4.80-5.00.

EAST CENTRAL AND NORTH CENTRAL STATES.—Due to the warm weather, consumption of stores has been heavy during the past two months, and heavy feeding will be necessary for many colonies. Pollen came in up to Nov. 6 in Michigan. Outdoor-wintered bees are being packed. Clover in Ohio is suffering badly from the drouth, but in other states it is in good shape for 1925. Inquiries for comb brisk, but little comb is now left unsold. Extracted demand spotted. Many beekeepers are already cleaned up. White clover extracted has sold in carlots at 10-10½c per lb., ton lots 10-12½c, some low as 8c; single 60s, 12-15c; small pails, 12½-17c per lb.; dark, ton lots, 9c; 60s and small pails, 10c per lb. Some off-grade extracted reported sold low as 4c per lb. in ton lots. Fancy white comb has sold per case at $5.00-5.75; No. 1, $4.00-5.50; mostly $5.00; No. 2, $4.00-4.50; buckwheat, No. 1, $3.75.

SOUTHEASTERN STATES.—Bees are still gathering a little more honey than they are consuming, and are unusually well supplied with stores. Brood-rearing is active; and bees are going into winter in good shape. Crop outlook not bright in Louisiana and Alabama because of long-continued drouth. Light amber extracted has sold in barrels at 8-10c per lb.; amber at 6-8c, some higher; white tupelo in ton lots at 11c per lb.; light amber tupelo at 9c per lb. White comb quoted at $4.50-5.50 per case.

WEST INDIES: Cuba.—Weather conditions are improving very slowly, and honey flowers are not yet in bloom. Offers received from Belgium and Holland for December-January shipment at 84-87c per gal., including cost and freight. Porto Rico (last half of October): Late extracting did not come up to expectations and crop is estimated at one-third of a normal crop previous to 1921 averages. Prices have stiffened. Extracted is quoted at 72c per gal., in 600-lb. barrels.

NORTHEASTERN STATES: Many bees are already packed for winter. Where fall flow was light, bees must be fed heavily. Many in northern New York have already starved, it is reported. In general, however, stores are fairly good. The long-continued drouth is expected to affect next year's clover crop. Comb honey is practically cleaned up, and many beekeepers are unable to fill orders. Large amounts of buckwheat extracted is being held; but extracted clover honey is rapidly disappearing. It has been estimated that approximately 75 per cent of all this year's honey crop in New York State is out of the producers' hands. White clover extracted has sold in 60s at 12-14c; few 15c per lb.; ton lots, 9½-12c; few 13c; 1 carlot sold at 11¾c; light amber, 60s, 11-11¼c per lb.; ton lots, 9-10c. Buckwheat, 60s, 10-10½c; few, 12c; ton lots, 8-10c; carlots, 9c; small pails, clover and buckwheat, 12-18c per lb. No. 1 white clover comb sold at $4.50-5.50, mostly $5.00 per case; No. 2, $3.50-4.50; No. 1 buckwheat, $3.50-4.25, some high as $5.25; No. 2, $2.75-3.50 per case.

Telegraphic Reports from Important Markets.
(Market reports are for Nov. 14 or 15.)

BOSTON.—Since last report 10 bbls. Porto Rico via New York and 450 cases New York arrived. Comb: Sales by receivers to retailers, market about steady, demand moderate. Vermont, 20-section cases, carton stock, white clover, 14-oz., $6.00; 12-oz., $5.00; 10-oz., $4.25. New York, 24-section cases white clover, $5.50-6.00. Extracted: Supplies light. Demand good, market stronger, prices higher. Per lb., sales by receivers to manufacturers,

wholesalers and bottlers, intermountain, white clover, 14-16c; Porto Rico, amber, 9½-10c.

CHICAGO.—Since last report 1096 lbs. Wisconsin, 192,925 lbs. Wyoming arrived. Demand and trading moderate on both comb and extracted. Supplies moderate. Market on extracted slightly weaker, on comb about steady. Demand and trading slower on beeswax, market slightly weaker. Extracted: Sales to bottlers and confectioners, Iowa, Michigan, Indiana, Ohio, Illinois and Minnesota, alfalfa and white clover mostly 11c; light amber mixed flavors, mostly 10c; dark mixed flavors, 9-9½c. Intermountain, white alfalfa and sweet clover,

(Continued on page 808.)

Honey Producers' Reports.

Early in November we sent the following questions to actual honey producers:

1. What is the condition of the colonies at this time in your locality as compared with normal? Give answer in per cent.
2. What is the condition of the honey plants for next season as compared with normal? Give answer in per cent.
3. How does the number of colonies in your locality at present compare with the average number during the past five years? Give answer in per cent.
4. What per cent of the honey produced in your locality has already left the hands of the producers?
5. What prices are producers in your locality now receiving for the new crop at their station in large lots, carload or entire crop? (a) For extracted honey, per pound? (b) for comb honey, fancy and No. 1 per case?
6. What are prices when sold to retailers in case lots in your locality? (a) Extracted honey in 5-lb. pails, or other retail packages, in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1, per case?
7. What is the retail price to consumers in your locality? (a) Extracted honey in 5-lb. pails or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1 per section?
8. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.

The answers are as follows:

State.	Reported by:	Col. Cond. Pct.	Hon. Plants Cond. Pct.	No. Col. Pct.	Crop Sold Pct.	In large lots. Ex.	In large lots. Comb.	In small lots. Ex.	In small lots. Comb.	Retail prices. Ex.	Retail prices. Comb.	Movement.
Ark.	Jas. Johnson	80	75	100	75					$1.25	$.25	Fair
Ark.	J. V. Ormond	100	80	100	100			1.35		1.50		Fair
Cal.	M. C. Richter	85	90	70	100					1.50		
Cal	M. H. Mendleson	50	100	50				.95	7.20	1.15	.40	Fair
Cal.	M. A. Saylor	90	80	90	85	.09	4.80	.75	4.80	.90	.30	Fair
Col.	B. W. Hopper	100	100	100								Rapid
Col.	J. A. Green	110	75	100	15			.75	4.50	.90	.25	Fair
Conn.	A. Latham	100	90	110				1.00	6.30	1.25	.35	Rapid
Conn.	A. W. Yates	100	100	100	50			1.00	7.00	1.25	.40	Fair
Fla.	C. C. Cook	80	80	80	80	.08		.80		1.00		Rapid
Fla.	H. Hewitt	100	100	130	75	.10		.75		1.00		Fair
Ga.	J. J. Wilder	100	100	115	75	.12	4.50	.80	4.50			Fair
Ill.	A. L. Kildow	100	150	110	10		4.00			.75	.25	Slow
Ind.	Jay Smith	100	125	100	50			1.05		1.25	.30	Fair
Ind.	T. C. Johnson	100	100	100	50			.90	5.25	1.15	.28	Slow
Ind.	E. S. Miller	95	100	100	45			.90	5.75	1.10	.30	Fair
Iowa.	W. S. Pangburn	100	100	90	75			.75	4.75	.95	.28	Fair
Iowa.	E. G. Brown	110	100	100	90	.10		.75	5.00	1.25	.30	Rapid
Iowa.	F. Coverdale	100	120	125	25			.75	4.75	1.00	.25	Slow
Ky.	P. C. Ward	100	90	100	10			1.15				Slow
La.	E. C. Davis	100	100	125	50	.08½		.75		1.00		
Md.	S. G. Crocker	100	90	100	50			1.00	5.00	1.38	.32	Fair
Me.	O. B. Griffin		60	90	30			1.13	6.75	1.50	.35	Slow
Mich.	F. Markham	100	100	90	75	.11		.80		1.25		Fair
Mich.	I. D. Bartlett	125	125	100	85			.75	5.50	1.00	.30	Fair
Mich.	E. D. Townsend	100	150	115	90	.11¼						Fair
Mich.	B. F. Kindig	100	125	100	85	.12½		.85	4.80	1.12	.32	Fair
Mo.	J. H. Fisbeck	100	125	100				1.00		1.25		Fair
Mo.	J. M. Romberger	100	90	100	100	.08	4.50	.80	5.50	1.00	.28	Fair
N.J.	E. G. Carr	90	90	100	60					1.25	.38	Fair
N.Y.	G. B. Howe	75	95	75	90			.87		1.13	.33	Fair
N.Y.	F. W. Lesser	100	100	125	75	.11½	5.00	.75	5.50	1.00	.30	Rapid
N.Y.	R. B. Willson	90	115	90	75	.10½	5.15	.80	5.15	.95	.25	Fair
N.C.	W. J. Martin	90	90	150	60	.10	4.00	1.00	5.00	1.25	.35	Fair
N.C.	C. L. Sams	100	100	105	75	.10	4.50	.75	5.00	1.00	.30	Slow
N.C.	C. S. Baumgarner	110	100	100	100			1.00		1.40	.30	Fair
Ohio.	R. D. Hiatt	90	100	110	90			1.00	6.00	1.30	.35	Fair
Ohio.	J. F. Moore	90	100	100	80	.10	5.00	.85	5.50	1.10	.30	Fair
Ohio.	F. Leininger	80	80	100	95	.10						Fair
Okla.	J. Heueisen	95	100	80	95			1.00	7.00	1.25	.35	Rapid
Okla.	C. F. Stiles	90	75	80	60			.90	5.75	1.15	.35	Fair
Pa.	C. N. Greene	90	90	100	50			.75	6.00	.90	.30	Fair
Pa.	D. C. Gilham	90	100	110	60			1.05	7.20	1.40	.40	Fair
Pa.	H. Beaver	90	85	100	75	.10	4.50	.70	4.80	.80	.25	Slow
S.C.	E. S. Prevost	60	100	100	60					1.00	.35	Fair
Tenn.	G. M. Bentley	95	100	100	100					1.75	.35	Fair
Tex.	T. A. Bowden	110	100	100	80			.80		1.05		Fair
Tex.	J. N. Mayes	100	50	50	90	.11	3.75			.75		Fair
Utah.	M. A. Gill	100	80	120	90	.09	4.00	.50	4.00	.60	.20	Rapid
Vt.	J. E. Crane	100	100	100	60		5.00	1.20	6.00	1.25	.35	Fair
Va.	T. C. Asher	70	100	110	90			1.10	6.00	1.25	.30	Fair
Va.	L. N. Gravely	40	60	45	70	.15	6.00	.75	6.00	1.00	.35	Slow
Wash.	W. L. Cox	100	100	115	15	.11	4.75	.75	5.50	1.00	.35	Slow
Wash.	G. W. B. Saxton	100	100	100	50	.09¾			7.50	.75		Fair
W.Va.	T. K. Massie	80	100	95	100					1.00	.40	
Wis.	N. E. France	100	110	90	80	.15	5.00	.80	4.50	1.13	.25	Fair
Wis.	E. Hassinger	95	110	95	65			.80		1.00		Fair
Wis.	H. F. Wilson	90	90		85	.13				1.15	.38	Rapid
Wyo.	A. D. Brown				90	.08½		.75		.75	.25	Rapid

XUM

To New York State Beekeepers

Some of the most experienced beekeepers tell us (weather at all favorable) to look for one of the largest honey crops ever in 1925.

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"Yours truly (signed) Harry Beaver."

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One two-pound package of bees, $2.50. Queen, untested, young, $1.00.

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Riley Yard.

GLEANINGS IN BEE CULTURE
DECEMBER, 1924

EDITORIAL

OUR CORNERSTONE

REMEMBER at all times that improved bee culture is our end and aim, and we trust no one will hesitate to give any facts from experience because they may tend to overthrow any particular person or "hobby." If any of our special plans don't work, or if anything we advertise has had its value overestimated, here in these pages is the place of all others to set the error right.—From A. I. Root's "introductory" in the first issue of Gleanings in Bee Culture, January 1, 1873.

Report of Seventh International Apicultural Congress.

SO many papers were sent to the Seventh International Apicultural Congress that it was not possible to have them all read at the meeting. However, these papers are all to appear in the forthcoming report of this Congress. Mr. C. Vaillancourt writes that the report will probably contain over 400 pages. It is to be published in both French and English, and will be furnished free to members of the International Congress. This report alone should be worth several times the amount of the membership fee. We understand from Mr. Vaillancourt that those who are not members of the International Apicultural Congress can secure this report for $2.00 per copy. The Connecticut Beekeepers' Association is already negotiating for 150 copies to supply the members of that association. No doubt other state associations will do likewise, thus placing the proceedings of the Seventh International Apicultural Congress in the hands of thousands of beekeepers who were not able to attend the meeting at Quebec in September.

Value of Local Associations.

DURING recent years hundreds of local beekeepers' associations have been organized. In many cases these are county associations, while in some cases two or three counties are combined. In many cases a beekeeping region overlaps portions of several counties so that an association covering the particular beekeeping locality can not well be confined to county boundary lines. While some of these associations contain only a few members, the work that can be accomplished even by the smallest county association is, in many cases, extremely important.

In the matter of disease control, some of these county associations are doing excellent work. In fact, many county associations have set for their goal the complete elimination of American foul brood from their county within a few years. The way the work has started off in some cases, this will no doubt be accomplished.

Elimination of American Foul Brood.

THE American Honey Producers' League is working out a plan for federal activity in the control of American foul brood which has for its object the complete elimination of this disease from the honey-producing areas of the United States as well as protection against future infection. If an appropriation for this purpose is secured, it is proposed to begin work in a few states at a time in those areas where large amounts of honey are produced and but little consumed. This would mean that the work would begin in some of the western states, probably in the Rocky Mountain region. As the disease is eradicated from these states the work would be carried to other states until it is finally eliminated from all the larger producing areas.

Heretofore all inspection work has been done by the various states. The federal government has been content to encourage the state in this work without attempting to do any inspection whatever. This is in accordance with the basic principles of government in this country by which the states are permitted to carry out their own work to a large extent. According to information received at this office from the Secretary of the League, this question will be discussed in the December issue of The League Bulletin which is published monthly at Madison, Wis.

XUM

Uniform Prices for Honey.

ONE encouraging feature of the honey market is the growing tendency toward uniformity in prices throughout the country. While a study of our market pages still reveals some difference in prices in different localities, these are largely explained by the varying freight rates to consuming centers or by the quality of honey produced in the locality. Unfortunately these variations are not shown in the tabulation of market reports, but those who are acquainted with the various localities represented will readily see the reason for the differences in price. For instance, in the buckwheat region of New York and Pennsylvania, both comb honey and extracted honey are quoted lower than in localities where clover honey is produced. In any region where amber and dark honey is produced the price, of course, is lower than in regions where white honey is produced. In the far west, where honey must be shipped a long distance, the price is usually enough lower to cover freight charges to the larger consuming centers.

While there is apparently a gradual equalization of prices taking place, there are still entirely too many instances of honey being sold below the market price. In one large city, extracted honey in five-pound pails was recently advertised by a chain store at 75 cents per pail. The beekeeper who produced this honey must have sold it for less than he could have secured by selling it in 60-lb. cans in one large lot. In many instances that have come to the Editor's attention, comb honey has been sold in single case lots to grocers for less than the price then being paid by large buyers in carload lots. If these producers add the expense of selling in single-case lots, their loss in selling at such prices must be considerable. But worst of all are the hundreds of cases where beekeepers have sold direct to consumers a few pounds at a time, at prices near those being paid by dealers in carload lots.

In many cases beekeepers count only their expenses connected with selling honey, failing to count their time. This is not only unfair to the beekeeper who does this service for nothing, but it tends to prevent others from marketing honey by making it unprofitable. No doubt in most of these cases the producer does not take a bee journal and is therefore not posted as to prices. Local beekeepers' associations can do much in preventing such a condition by giving out information in regard to honey prices or by purchasing honey offered below the market price, and selling it at the higher price.

Brood Rearing in Winter.

A WRITER for the Irish Bee Journal puts forth, in the October issue, a theory of wintering entirely opposed to the well established belief in this country in regard to the behavior of bees in winter. His theory is that spring dwindling, or a failure to winter, is brought about because the colony is not strong enough to rear brood during the winter and reasons that a larger cluster will enable a colony to rear brood.

The advantages of a large cluster for winter are well recognized in this country, but it is also well known that other things being equal, colonies having a large cluster are less inclined to rear brood during the winter than colonies having small clusters. When wintering normally, there is a smaller proportion of bees active in the larger clusters than in the smaller ones, and the temperature within the smaller cluster, averages higher than the temperature within the large cluster. It is not difficult to understand why this is true when it is remembered that the radiating surface of a larger cluster is less, in proportion to the number of bees, than in a smaller cluster. This is merely an application of the mathematical rule that the volume of a sphere increases as the cube of the diameter while the surface increases as the square of the diameter. In other words, if the diameter of one cluster is double that of another, the larger cluster contains eight times as many bees as the smaller one, but only four times as much radiating surface on the outside of the sphere, assuming that both clusters are equally compact. The smaller cluster must generate more heat in proportion to the number of bees present because proportionately more heat is lost on account of its relatively greater radiating surface. This, in turn, results in bees being worn out earlier in late winter or spring if exposed to very low temperatures. In such colonies brood-rearing usually is begun early while in the larger clusters brood-rearing is usually postponed until it can be safely carried on as spring approaches. Since brood-rearing wears bees out rapidly, it often happens that the old bees die off faster in the spring than young bees are reared. Beekeepers call this spring dwindling.

The northern winter is considerably longer than the natural span of life of the worker bees when active. To survive the winter, the individual bees either must live longer than the normal span of life when active or the colony must rear brood to replace those which die from age. Fortunately for the beekeeper the bees use the former method

when in normal condition. By remaining quiet they are able to pass the long winter without materially aging if conditions are favorable and thus avoid the rearing of brood which would dangerously weaken the vitality of the bees and at the same time require a large amount of food to rear several generations of young during the winter.

In the North bees that are wintering well are often able to postpone brood-rearing until March and when wintered in cellars, even until the first of April or later. In the South, of course, the broodless period is much shorter. Perhaps the writer mentioned above had in mind conditions similar to those in some of our southern states, but even there winter brood-rearing is by no means always desirable.

The Quiescence of Winter.

BEEKEEPERS are in the habit of saying that worker bees live six weeks during the active season and six months in winter when they are quiet. There is considerable evidence indicating that worker bees live longer in the active season when nectar is abundant than they do when they are compelled to search longer to secure a load. Colonies are often depleted rapidly when there is just enough nectar to tempt the bees out so that they spend most of their energy in searching, while during a heavy honey flow, when a load of nectar is easily secured, they wear themselves out less rapidly. During a dearth of nectar, even in the summer, they remain relatively quiet and as a result live much longer than six weeks.

The greatest degree of quiescence occurs during the fall and early winter. If bees could remain as quiet during the entire winter as they usually are in November and early December in the North, they would no doubt live much longer than six months. If this degree of quiescence could be maintained throughout the winter, the bees would come out in the spring capable of doing nearly as much work as though they had been born at that time. While they do not hibernate, they do, under most favorable conditions, remain so quiet that they do not age materially during the winter, thus retaining their vigor until spring when it is so much needed in the spring activity. The ability to prolong their lives to four or five times the normal span of life is a remarkable characteristic of the honeybee. To live long they must live slowly and to winter well in the North they must live long. The instinct to conserve their energy outside the active season is therefore deeply seated in the honeybee and the quiescence of winter is not easily disturbed.

In the North where bees are confined to their hives for long periods during winter there are two factors which compel them to expend their energy. These are the generation of heat by muscular activity to keep the cluster warm and the irritation from the retention of feces resulting from indigestible matter in their food. Fortunate is the colony, therefore, which is so well protected on its summer stand that it is compelled to generate but little heat to keep up the temperature within the cluster or that is in a good bee cellar where the generation of heat is reduced to a minimum. Of these two disturbing factors, however, the latter is often much more destructive. In other words, it is often easier for the colony to survive the winter without winter protection other than the summer hive if provided with the best of stores, than it is to survive the winter in a well-packed hive or in a good bee cellar, but having inferior winter stores. Doubly fortunate, therefore, is the colony which is not only protected for winter, but which also is supplied with sound stores or lacking this has opportunity for a cleansing flight every two or three weeks during the winter.

In the South, where bees fly freely, there are also two factors which consume the vitality of the bees; the generation of heat during cold spells and the useless flight over barren fields when the weather is warm. As a rule, too frequent winter flights are not so destructive to the vitality of the bees as the activity within the cluster resulting from poor food plus confinement to the hive without cleansing flights as in the North. Winter flights are especially destructive to their vitality if the bees are tempted by the presence of a little pollen and nectar to spend their energy in searching for food. The northern beekeeper has at least a slight advantage in wintering, inasmuch as he is able to control both of these disturbing factors, while the southern beekeeper can not well prevent excessive winter flights which sometimes so deplete his colonies that they are not able to build up rapidly when brood-rearing should begin. Some southern beekeepers have seriously considered placing their bees in cellars or cold storage during the winter to avoid such depletion of colonies but this would require better winter stores than are usually present in the hives if natural stores are used. To make such a plan successful would necessitate feeding sugar syrup for winter stores in many southern localities.

LOCALIZATION OF QUEEN-REARING

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Shifting of the Geographical Distribution of this Industry and the Causes of this Shifting

Throughout its history in the United States, queen-rearing has been undergoing geographical localization to a degree probably little appreciated by the ordinary observer. Such a trend appears to be inevitable when it is borne in mind that commercial queen-rearing did not have an independent origin but was practiced first as a sideline by honey producers. Because of this fact the chances were against queen-rearing becoming centered permanently in the localities in which it originated, since the natural conditions making for optimum honey crops, and consequently for extensive commercial honey production, are not those best adapted to commercial queen-rearing.

The introduction of the Italian bee in 1860 marks the beginning of commercial queen-rearing in the United States. At that time the great desire for this new race afforded everyone with even a single colony of Italian bees ample opportunity to dispose of all queens he might choose to rear. The possibilities of queen-breeding as a separate means of livelihood, or the ultimate size which the industry would attain, were probably little suspected by the pioneer queen-breeders.

In order to trace the changes in the geographical distribution of queen-breeders, a thorough search has been made through American beekeeping periodicals for queen-breeders' advertisements. Only those advertisements offering queens reared during the same year have been used in this study. In any case where it appeared that a queen-breeder was advertising under several names, his name was counted but once. Package-bee producers have not been included unless they specifically offered for sale queens not put up with package bees. From lists thus obtained, data for each state have been compiled.

To interpret these data, use has been made of statistics given by Dr. S. A. Jones as to the time elapsing between fall and spring nectar flows and as to the period of confinement to the hive without flight in winter. This information appears in the United States Department of Agriculture Bulletin No. 685, entitled "Honeybees and Honey Production in the United States." Data as to the average yield per colony over the period 1913 to 1923 have been computed from reports of annual honey production taken from semi-monthly reports on honey published by the Bureau of Agricultural Economics.

Although it is realized that the number of queen-breeders in any state may not bear a direct relationship to the number of queens reared for sale within that state, yet the number of queen-breeders advertising in any given locality over a period of years as compared with the number of queen-breeders advertising in any other locality over the same period of years, gives a good index as to the relative importance of queen-rearing in these regions. Other things being equal, queen-breeders tend to become more numerous and permanent in those localities possessing the greatest natural advantages for queen-rearing.

Most Queens Reared in the North in Early Days.

Since most of the commercial honey producers in the early days lived in the North, and since the South was the scene of a long war, it occasions little surprise to learn that during the decade 1861 to 1870 the seven northern states, Ohio, New York, Illinois, Iowa, Massachusetts, Michigan and Vermont, furnished three-fourths of the list of queen-breeders. Of these, Ohio, then the home of Langstroth, furnished the most, 21.7 per cent; New York was second with 13 per cent. The entire list, containing 23 names, comes from 12 states.

The next decade, 1871 to 1880, saw nearly the same distribution. During this period queen-rearing was spreading to west and south, and Indiana, Missouri and Tennessee appear among the nine states furnishing 75 per cent of the advertising queen-breeders, while Massachusetts and Vermont had dropped from this group. Ohio still retained the lead, but instead of furnishing 21.7 per cent, furnished only 17.6 per cent. Illinois was second with 10.8 per cent, and Pennsylvania third with almost 10 per cent. Ohio, Illinois, Pennsylvania, Tennessee and New York furnished 54 per cent. The addition of Michigan, Indiana, Missouri and Iowa accounts for 75 per cent of the advertising queen-breeders in this period. Twenty-eight states furnished the entire list of 221 names.

The Heyday of Queen-rearing in the United States.

The following decade, 1881 to 1890, saw a wonderful stimulus given to the industry. It might almost be termed the heyday of queen-rearing in the United States because, coupled with the enthusiasm sometimes attendant upon any new

industry, there came increased excitement in obtaining new races, such as Cyprians, Banats, Caucasians, Carniolans and Holy Lands. It seems as though every amateur beekeeper must have offered queens for sale at this time. Thirty-six states were represented, and furnished 408 names. Thirteen states presented 75 per cent of the total. Ohio still retained its lead, but furnished only 13.48 per cent. Nearly one-fourth of the queen-breeders were still to be found in northern states, since New York and Ohio furnished 23.77 per cent. In fact, the total for the North becomes 51 per cent by including Illinois, Indiana, Pennsylvania and Michigan, the next states in order on the list. The remainder of the states among the 13 furnishing three-fourths of the total are Missouri, Iowa, Kentucky, Texas, Tennessee, Massachusetts and Georgia, in the order named. A noteworthy feature is the increase in southern states.

The decade from 1891 to 1900, inclusive, proved a period of retrenchment in queen-rearing as well as in honey production. The decrease is apparent only in the number of queen-breeders represented and not in the number of states, since the 232 names are distributed among 35 states and the District of Columbia. Sixteen states contributed three-fourths of the names. As Texas displaced Ohio, a northern state yielded the lead for the first time to a state with warmer climate. Texas furnished 9.9 per cent, and Ohio and Illinois each 7.76 per cent, making 25.4 per cent in all. The addition of Pennsylvania, Tennessee, Indiana, New York, Missouri and Florida brings the list up to 53 per cent. To make 75 per cent, Minnesota, Michigan, Iowa, Massachusetts, Kansas, Georgia and Arkansas must be added.

The latter half of the following decade, 1901 to 1910, was marked by the passage of the Federal Food and Drugs Act. As a consequence of its effect on the sale of extracted honey, the production of honey increased throughout the country as a whole because extracted honey can be produced profitably in certain regions where conditions are unsuitable for the production of comb honey. Ultimately the queen bee business was bound to benefit also. Even in the decade under discussion some slight result was noticeable. Sixteen states again furnished three-fourths of the names. Texas retained its lead with a percentage nearly identical with that of the previous decade, in other words 10.1 per cent as against 9.9 per cent. Instead of Texas, Ohio and Illinois producing 25 per cent, however, the ranking states became Texas, New York and Pennsylvania. Ohio and Illinois, together with Indiana, Missouri and California complete a list of states producing 52 per cent. The eight states just named, together with Michigan, Iowa, Massachusetts, Alabama, Tennessee, North Carolina, Florida and Georgia furnished 75 per cent. This decade marks the first appearance of California in such a grouping. The influx of southern states is especially noticeable, among the newcomers being Alabama. The total number of queen-breeders was 267 from 41 states and the District of Columbia.

A Second Boom Period in Queen-rearing.

The next decade, 1911 to 1920, saw great development in the queen-rearing industry. The number of queen-breeders, 410, equalled that attained during the boom period of 1881 to 1890. Honey production increased not only on account of the Federal Food and Drugs Act, but also because of the demand for honey to meet the sugar shortage brought on by the World War. These factors in themselves would have stimulated the queen-rearing industry. In the latter part of the decade the package bee business, however, far outgrew previous proportions, thereby causing a much increased demand for queens. States with warmer climates and warmer seasons seized the opportunity of wresting the queen-rearing supremacy from northern states, inasmuch as they were better adapted to meet the greatly increased call for both bees and queens. Thus California and Texas together furnished 23.66 per cent, Alabama, New York, Pennsylvania, Illinois and Ohio furnished enough to bring the list to 51.22 per cent. Counting in Michigan, Arkansas, Missouri, Louisiana, Indiana, Florida and North Carolina, making 14 states in all, brings the total to 72.93 per cent. All of these states, except Arkansas and Louisiana, were included in the minimum number of states which furnished three-fourths in the preceding decade. Arkansas and Louisiana had formerly appeared in such a grouping. The total number of states was 43, and the District of Columbia was also represented.

The first three years of the present decade, 1921 to 1923, seem to indicate that this period will surpass any former because, even in these three years the advertisements from queen-breeders already number 336, equal to more than 80 per cent of the maximum number of queen-breeders advertising in any previous decade. They come from 38 states, of which 12 furnish 75 per cent. The most remarkable increase in this period is that of Alabama which has taken away second place from Texas. California and Alabama together furnished 29.46 per

cent, the addition of Texas, Georgia and Louisiana making 51.49 per cent. New York, Ohio, Michigan, Mississippi, Pennsylvania, Missouri and North Carolina ranked next in the order named.

In the first decade 12 states, Illinois, Iowa, Kentucky, Maryland, Massachusetts, Michigan, New Hampshire, New York, Ohio, Tennessee, Vermont and Wisconsin furnished all the advertising queen-breeders, or 100 per cent. In the next decade, 1871 to 1880, this same group furnished only 63.8 per cent; in the following decade, 56.62 per cent; from 1891 to 1900, 43.53 per cent; from 1901 to 1910, 34.58 per cent; from 1911 to 1920, 30.24 per cent; and from 1921 to 1923, 20.83 per cent. No other northern states, except Pennsylvania and Indiana, have appeared in any decade in the minimum number furnishing 50 per cent. On the other hand, the five leading states at the present time do not appear at all in the list for 1861 to 1870. In the next decade they furnished 6.85 per cent; in the one following, 11.27 per cent; from 1891 to 1900, 18.1 per cent; from 1901 to 1910, 20.97 per cent; from 1911 to 1920, 34.15 per cent; and finally from 1921 to 1923, 51.49 per cent.

The Shift to States Having Longer Seasons.

From the foregoing it is at once apparent that the queen-rearing industry has been tending to shift from states with shorter seasons to those with longer seasons. Thus each of the five states which furnished 51.49 per cent of the names in the period from 1921 to 1923 has a long season. Of the 12 states which in the same period furnished 75 per cent, only four, New York, Michigan, Ohio and Pennsylvania have relatively short seasons. Of these, just three were among the seven states furnishing three-fourths in the first decade, Ohio and New York topping the entire list at that time. Each of the five states furnishing one-half of the advertising queen-breeders at the present time is a state with an unusually short period of confinement to the hive without flight in winter, and each also has a period between fall and spring honey flows which is shorter than the average for the entire country. These factors are especially striking when compared with similar data for the leading states of the first decade. Furthermore, with the exception of California, each of the first five states leading in the present period has an average colony yield farther below the average for the entire country than has any of the northern states appearing among the 12 states furnishing 75 per cent of the names.

Influence of Package-bee Industry.

The entire basis for the present geographical localization of the queen-rearing industry is primarily economic, and only secondarily climatic, because excellent queens may be reared in any state at some time of the year. It must be borne in mind that the output of queen-rearing apiaries is mainly disposed of through two different avenues, (1) direct to the honey producer, and (2) to the package bee shipper. Since the advent of improved transportation of queen bees by mail, the location of the queen-breeder makes little difference compared with its importance in the first decade. On the other hand, queens shipped with package bees should not be transported for any great distance before being placed in the packages. Consequently there is a tendency for queen-rearing apiaries to be conducted in connection with the package-bee business or in some location nearby. Such queen-rearing apiaries are in a position to dispose of their product in both of the ways mentioned above. The factors, then, which are most advantageous to the queen-breeder of today are those which are most advantageous to the package-bee business. These are (1) length of active season, (2) presence of natural conditions tending to minimize amount of feeding, and (3) presence of conditions making more profitable the production of package-bees than that of honey.

Since the penetration of the honeybee into all states of the Union, nectar is being carried into hives somewhere in the country in practically every month. This means that there is a potential demand for queens extending almost throughout the entire year. Consequently, other things being equal, the queen-breeder enjoying the longest seasons should win out against his competitors. For the package-bee business this is even more important because the spring-time trade is exceedingly great. The supremacy of states with longer seasons only became apparent as the package-bee business developed. Furthermore those regions are most favorable which provide just enough honey flow throughout the entire season to avoid expense of feeding and yet not too heavy to interfere with queen-rearing operations. This is true of the package-bee business also because under such conditions bees bring larger returns sold in packages than would any honey the same bees might gather in that locality if they were not sold. These conditions are most nearly approximated, of course, in states with warmer climates.

Influence of Character and Extent of Honey Flow.

In every instance each of the five states in the group furnishing 50 per cent of queen-breeders in 1921-1923 has a period

of confinement to the hive during the period of quiescence which averages one month or less. This means a much longer season available for rearing queens than is the case in the states in which the industry first started. In some states queen-breeders now promise delivery every month in the year. Of the northern states which at times have ranked among the first, Ohio has the shortest similar period, and even for this state it averages two months. As far as the period between fall and summer nectar flows is concerned, in none of the five leading states is the average more than five months. Of the four northern states appearing among the leading twelve, it is again Ohio which has the shortest period in this respect. Thus it is readily seen that the possibility of being compelled to feed is much less in the five leading states. On the other hand, with the exception of California, these same states have colony yields farther below the average than do any of the northern states just mentioned. In fact, three of the latter are above the country's average, and the lowest is only 2.7 pounds below. Of the 12 states which are the origin of 75 per cent of the queen-breeders advertising in this decade, 75 per cent have colony yields below the average for the country. This can be taken to mean that queen-rearing is tending to become most concentrated in regions with lower average colony yields.

The question arises why California, a state above the average in honey production, ranks first in the number of queen-breeders. First of all, the season there is favorable. Secondly, California is so large that in some localities conditions are bound to exist which make queen-rearing more profitable than honey production. This factor, coupled with the fact that the other nearest queen-rearing centers are hundreds of miles distant over a great mountain system, have served to render queen-rearing profitable. This is all the more the case because a heavy local demand for queens exists in California, a state which produces annually 10 per cent of the honey crop of the United States. Texas is another state ranking high in the queen-rearing industry partly because of highly specialized conditions. Its season is slightly more favorable than that of Alabama, but the colony yield is more nearly the average for the United States. Texas is even situated somewhat less advantageously for disposal of its product to northern regions. On the other hand, its vast area, coupled with the fact that many regions within the state produce much honey, and the fact that it is some distance from other queen-rearing centers, give it a good home market. In late years, moreover, it has become quite a center for package bees. It also has had the advantage of an early start.

Where Queens Will be Reared in the Future.

What further geographical localization will develop in the queenrearing industry in the present decade, or what the future will bring forth, seems to have been indicated to some degree by past developments. That there will be some shifting in the ranking of the states during the present decade seems quite evident. As a matter of fact the ranking in 1923 is somewhat different from that of the period 1921-1923 inclusive. In 1923 the same five states still claimed over one-half of the queen-breeders, but Alabama headed the list with 19.14 per cent. Texas was second with 11.49 per cent, while California had dropped to third place with 11 per cent. Georgia came fourth with 7.18 per cent, and Louisiana fifth with 6.7 per cent. These five states accounted for 55.5 per cent. To account for 75 per cent, six more states are necessary. These are: New York, 4.31 per cent; North Carolina, 3.83 per cent; Ohio, 3.35 per cent; and any three of the four following states: Michigan, Mississippi, Missouri and Tennesee, each with 2.87 per cent. It is interesting to note that in the same year, 70 per cent of the advertising queen-breeders were in Alabama, Texas, California, Louisiana, Georgia, North Carolina, Mississippi, Missouri, Tennessee and Florida, in the order named. The number of queen-breeders represented is 209.

It may be well to analyze Alabama's chances of retaining supremacy in the queen-rearing field as compared with other states possessing somewhat similar natural conditions. California, of course, came to the forefront because of exceptional conditions geographically. Alabama, on the other hand, is nearer the center of honey production in the United States, and if not the center, is near the center, of the package-bee business. Alabama's average colony yield is 17.2 pounds below that for the entire country. Only South Carolina, Arkansas, Delaware, Tennessee and West Virginia have average colony yields below that of Alabama. In no other respect do statistics give any evidence that these states are in the same class with Alabama for queen-rearing, possibly excepting Arkansas.

As far as length of period of confinement to the hive during winter is concerned, Texas has the same period as Alabama, while only Florida, Mississippi, Louisiana, New Mexico, Arizona and California have a shorter period. Of

these, Florida, New Mexico and Arizona have honey crops above the average, and hence do not enter much into competition with the other states as favorably situated for queen-rearing. Florida, furthermore, has several insect enemies which destroy the queens, while New Mexico and Arizona are too distant from any large centers of local demand for queen bees to enable these states to become dangerous competitors of well-established queen-rearing centers. The other states named as possessing a favorable period of confinement are already among the eleven furnishing 75 per cent.

As to actual time between honey flows, only North Carolina, Georgia, Florida, Louisiana, Texas, Arkansas, Arizona and California have shorter seasons than Alabama, while Oregon has the same average. As already stated, Florida, Arizona, and Oregon seem to be out of the running because of their good honey crops. California, Georgia, Louisiana and Texas, together with Alabama, already furnish over half of the advertising queen-breeders, while North Carolina is among the eleven states furnishing 75 per cent, in the period from 1921 to 1923.

Arkansas forms the only exception to the rule that queen-rearing tends to center in regions with a short confinement period, a short period between fall and summer nectar flows, and a honey crop below the average. Other local conditions may enter in here which tend to reduce the marketable honey crop, because the average for that state should be higher than it is, considering its flora. In certain sections of the state the honey is bitter. There are other states just to the north of the five leading states with conditions somewhat similar in many respects, but in no case do they have a combination of conditions excelling those of the five leading states. Furthermore, they have just enough cooler weather to keep them from giving serious competition.

Even with highly improved methods of delivering queen bees from distant places, there is a certain amount of delay in filling orders and in shipping which is reduced to only a few hours when the queen-breeder is near enough to render delivery possible within a day. Consequently as long as honey production is continued in northern states, there will always be a greater or less amount of queen-rearing in the North. New York and Michigan, for instance, still remains in the list of leading states. Queen-rearing was established in these states in the first decade, and has kept its start. Being, in addition, good honey-producing states at some distance from southern producing centers, they afford a local market which has tended to continue the industry begun in the early days. That New York is enjoying the advantage of the early start and a favorable local demand is shown by a comparison with Iowa. In the first decade New York ranked second, and Iowa fourth. In crop yields New York is 12.6 pounds above the average and Iowa 13.9 pounds. The average length of winter confinement in New York is 2.8 months, in Iowa 2.2 months. In New York the average period between fall and summer nectar flows is 7.2 months; in Iowa it is 6.5 months. In the last two respects Iowa has the advantage. On the other hand, the time of one of the principal nectar flows in New York (buckwheat) is so much later than the time of the principal honey flow in Iowa (clover) as to give a fairly long season to be devoted to queen-rearing in advance of the honey flow. Queen-rearing became more firmly intrenched in New York state from the very beginning. The local demand is intensified by the necessity for always having young queens with which to combat European foul brood. Regardless of any natural disadvantages, however, a Pratt, a Doolittle, or an Alley will pursue his chosen work anywhere he wishes.

The effects of the present-day specialization on the queen-rearing industry are hard to estimate. Its benefits appear to be two-fold. First, it allows the specialist honey producer to obtain queens practically when he wishes and in such numbers as he requires, thus relieving him from the necessity of making special provisions for queen-rearing during a period when his time and attention are taken up with his crop. Secondly, it permits people to utilize the nectar-resources of certain regions profitably where the returns from commercial honey production would be too uncertain.

Few Recent Improvements in Queen-rearing.

In one important respect the later-day specialization in the queen-rearing industry appears to have accomplished little, and that is in regard to devising new methods of manipulation. For the most part, commercial queen-breeders of the present are pursuing those methods, only slightly modified at best, which were devised by Pratt, Doolittle and Alley. Does this mean that American queen-rearing practices have been developed to a degree of perfection beyond further improvement? It is probably more nearly the case to say that the demand for queens is so large that competition does not yet force the commercial queen-rearing specialists to devise new methods to continue their business profitably. It

must be remembered that queen-rearing started in the North, where the adverse conditions taxed the ingenuity of a Pratt, a Doolittle, and an Alley to devise methods which would tend to alleviate natural conditions to some extent and enable them to meet the growing demands upon the industry. Their endeavors were highly successful since their methods greatly increased the number of queens which could be reared during their relatively short seasons. Coincidentally with the enormous expansions in the honey industry in recent years, the center of the scene of application of these methods had shifted to regions with longer seasons. This in itself enables such a greatly increased output of queens, without the necessity of devising any new methods, that a seasonal queen-rearing record of over 17,000 queens has already been achieved by one queen-rearing establishment. As long as the present demand for queen bees continues, it is small wonder that no new methods are being worked out. At the present time it seems more feasible to the queen-breeder to add to his queen-rearing equipment, if he wishes to increase his output, rather than to devise new methods to increase the output of the equipment he already possesses.

The lack of interest in new methods is nowhere more apparent than in the dearth of articles on the subject in American beekeeping journals of the present day. In one of the leading journals as many articles were published on this topic during the years 1901 to 1906, inclusive, as have appeared in all the years since then. Just so soon, however, as the production of queens under present methods becomes so great as to cut seriously into the returns of the business, just so soon will queen breeders set to work once more to devise radical means of cutting the cost of production.

In conclusion it may be stated that, leaving aside any exceptional conditions, queen-rearing operations are tending to become most localized in regions favorable for the production of package bees. In other words, the queen-rearing industry is becoming localized in those regions where, for a longer period of the year than elsewhere, both package bees and queen bees can be produced more cheaply than can honey. The length of season in such regions has so increased the possibilities of output with old methods that it has not yet been necessary to devise new methods to meet competition.

Washington, D. C.

LARGE SCALE HONEY PRODUCTION

By Dora Stuart

How Two Brothers in California Produce Large Crops of Honey by Migratory Beekeeping and Broad Gauge Methods

"Probably the best equipped honey producing plant in the world!"

That verdict from a man who himself had kept bees and observed beekeeping in many parts of the world, was alone quite enough to excite the liveliest curiosity.

Where is this plant? When did it spring into existence? In what particular is its equipment superior? Who operates this mammoth machine, and why has it not been brought to the attention of the beekeeping fraternity ere this?

Answering the last query first, Koehnen Brothers have remained unsung probably for the same reason they advanced when being prevailed upon to stop work long enough to be photographed and to answer for publication the other three questions: some one might chance to see the write-up in Gleanings and be inspired personally to visit the plant, a catastrophe to be avoided, as it would interrupt their work and throw the entire gigantic organism temporarily out of gear.

But there appeared to be no alternative. To get the facts about Koehnen Brothers, one simply must not only visit the plant, but one must be a working visitor as well. Not that the hosts require value received in the form of labor. Far from it. It simply means that if one would enjoy for a period the society of these two brothers, one must get busy and stay busy. That is the cornerstone on which the plant was erected, and the principle on which it is operated.

For be it known by these presents, that Koehnen Brothers have beaten the bees at their own busy game. They are on the job long after those tired little people go to sleep for the winter, and are right there to tell them "Howdy!" when the resurrected bees emerge in the spring. It is even rumored that the activities of these two human dynamos rout the bees out before their wont, and in self-defense they begin brood-rearing two months ahead of the usual time. Probably that accounts for the size of their nuclei, as Koehnen Brothers term the one-thousand one-story colonies scattered over the five acres that comprise the hub of their plant—nuclei so thriv-

XUM

Making bottom-boards from old shade-boards. In the building is a power saw for cutting lumber and forms for nailing cases for 5-gallon cans. Californians prefer working out of doors.

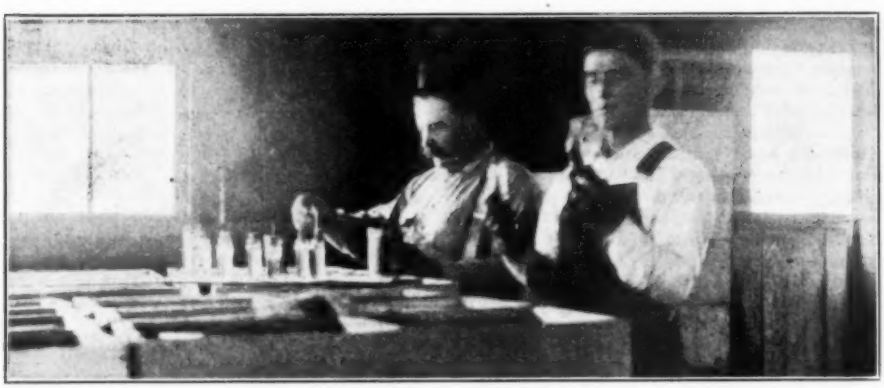
ing that the average beekeeper would call them full-fledged colonies ready for supers.

But everything grows apace in that fertile river country. Even the "best equipped honey producing plant in the world," tucked snugly beneath the levee, was itself only a nucleus not so very long ago, consisting merely of a few box hives brought home on an old spring wagon used for peddling fish. For at that time Koehnen Brothers were just fishermen seining gold in the shape of fish-filled nets from the river by night, with which to purchase modern equipment to house the treasures their bees collected along the river banks by day.

"Yep, worked all day an' all night, too, them boys!" declared an old neighbor, with an emphasis that voiced a general sentiment in the community that the brothers deserve all the good fortune that has come their way.

It was Albert, the elder brother, who first became interested in the care of bees and in their commercial possibilities. He, with the help of his younger brother, Carl, then just a boy in school, had built up an apiary of 800 colonies when the world war took him overseas. It was then that Carl displayed both patriotism and heroism. He festooned the fish nets where they are still draped, on the walls of what is now one of their smaller warehouses, and went over the top to meet his enemies, the bees, numbering a million strong. They were defeated on their own ground in the very first round, and so speedily trained in the ways of peace that when Albert returned from France, all decorated for courage in action on three important fronts, he found what so many ex-service men sought in vain—a well-organized industry just waiting further developments. It was especially opportune, as their old occupation was closed by a legislative act making their own particular bend in the river restricted district to fishermen.

When asked if he had not had a hunch that the river would soon be closed to fishing, right about the time he took up bees, Carl replied, "No, not exactly; I had a hunch to go into beekeeping right



Grading honey for carload shipments.

about the time the river was closed." Which answer reminds one of the little girl who had not yet "memorized" her piece, but who knew it "by heart."

So, "the best equipped honey-producing plant in the world" did not "spring" into existence. It was developed by two capable men who, relieved from fishing by night, could now devote their entire twenty-four hours daily exclusively to bees.

Broad-gauge men require broad-gauge objectives. Just as Koehnen Brothers had supplied almost entirely the markets of San Joaquin Valley with fish, so must the markets be stocked with honey, and bees, and the star thistle belt of northern California accommodates apiaries comprising hundreds of colonies.

The product is trucked from every point of the compass to the huge warehouses on the home place. A week at that plant during the month of October, gave one inquisitive visitor a lasting impression of the magnitude commercial honey production can attain under a management guided by a long-range vision.

Three carloads of honey were being graded can by can and case by case by an expert grader; the trucks were plying between warehouse and station carrying

The honey warehouse is 40 x 60 feet. The truck is driven to the platform within the building and the honey is loaded by means of a hand truck.

the demand has been so bountifully met that the product from their apiaries is being consumed in eastern states and even in European countries.

Migratory Beekeeping on a Large Scale.

Their bees are everywhere, two White motor trucks and a trailer annihilating such minor matters as distance. If a carload of sage honey is required, immediately an apiary of sufficient strength to gather that amount is put on wheels and transported to Monterey County, 200 miles or more from home. The same is true of orange honey, bees being transported across to the orange belt at Porterville. Alfalfa fields throughout central California know the Koehnen the honey to the depot; a larger order of comb honey was being graded and delivered to a customer; another large order of extracted honey was being liquefied and packed in five-pound pails right on the premises; besides several small orders delivered direct to buyers; in the shadow of a large storehouse and workshop, a man was hammering away on bottom-boards for beehives when he wasn't busy smearing them with paint, the bottom-boards being fashioned from discarded shade boards; all these activities going on simultaneously. One wonders when they ate and slept. As a matter of fact they did very little of either. The dinner gong would sound right on

the stroke of twelve, and every few moments thereafter until from a lurking fear that some day they would try the patience of their excellent cook too far, and so starve outright, all the men, including workmen, honey-grader, customers and visitors would be rounded up and marshalled into the ranch-house kitchen, where each spent the shortest time compatible with satisfying hunger. Then all were out and at it again.

Liquifying tank located out of doors over a pit in the ground. Heat is applied below the ground.

All except the woman customer who was filling pails. She liked to chat a few moments with the only other woman on the premises, and thereby hangs a most interesting discovery.

Many Eager Consumers of Honey.

The work incident to filling the pails was to have been conducted in a bee-tight building, but the space being occupied by truck and trailer during the carload shipping process, an extracting tent was hastily erected near the melter for that purpose. At first it was feared that robber bees from the thousand nuclei would make the tent uninhabitable, but the weather being fine, the bees were kept busy in their accustomed pastures. Other livestock, however, soon found there were free samples of honey on tap. Dogs licked the honey off the empty five-gallon cans set out to be washed; cats lapped it up when accidentally spilled; the chickens and cow eagerly drank water sweetened with honey washings. Apparently every living thing on the ranch had the honey habit.

But just suppose you had been in the place of that woman customer and had tarried too long over the teacup? And suppose when you returned to the tent you had discovered standing in the middle of a pool of honey a large red hog, blissfully nosing the stream of amber liquid that poured from the opened honey-gate of a two-ton settling tank? Wouldn't it, to put it mildly, have surprised you?

The customer was horrified. She screamed and struck at the intruder with a hammer, but with firmly-planted feet and a contented grunt the animal continued to "hog" the sweets, until it finally occurred to the outraged customer to close the honey-gate and call for reinforcements. Nor was it particularly consoling to listen to the men tell a tale about the same red hog who, it appeared, had started on its career of crime the previous year, with a consequent loss of a ton of honey. Or, that another hog in the sage belt had wasted several tons of water-white sage honey by being over-curious concerning a certain faucet.

Producing Honey by Machinery.

Now going back to the plant, what is a plant anyway? If it is not a series of buildings and equipment constructed to handle the largest possible volume of business with the least expenditure of time, energy and money, then what is it?

Five-pound pails filled and ready to be packed in shipping cartons, then carried away on the trailer.

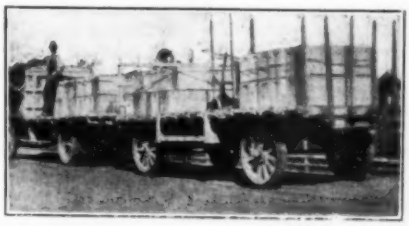
Economy of man power depends upon machinery almost humanly intelligent. One never sees a Koehnen lift a case of honey onto a truck. Their warehouse platforms are built on a level with the truck beds, and a truck wheelbarrow that grasps and lifts four cases of honey aggregating 500 pounds at a time, does the rest; or turn the handle of an extractor. Two electrically-driven eight-basket automatic extracting machines manipulated by one man to each machine will do the work of six men under the old-fashioned methods; or see them disinfecting frames in the usual one-horse manner; a tank in

a specially-built room 16 x 30 feet, that will treat by steam sixteen supers of frames, or 1500 frames in the course of a ten-hour day, makes the average tank look like a toy, and by its use they have reduced disease from thirty to ten per cent, and that percentage is still on the decrease; or, when melting candied honey, the walls of an ingeniously-arranged cement pit large enough for an oil-stove, will support the weight of a tank sufficiently large to liquify six cases or twelve cans of candied honey at one time. A hose to fill the tank, a regular discharge pipe, a thermometer and testing rod, are conveniences that put back the "ardor" in the arduous task of melting honey. But best of all is the underground flame that doesn't have to be watched—one that can be left burning all night if necessary, without danger from explosion. By changing a batch of cans at midnight, four batches at the rate of a batch every six hours, or 48 cans can be melted in one day, or a whole carload in a fortnight.

The living quarters have, throughout the years, taken on the character of the cottage system. Each individual connected with the plant has his private bunkhouse, and so it happened that the five-pound pail customer found herself for one week the sole occupant of the main building.

A tiny closed-in garden at the side of one cozy cottage plainly shows that chance had no part in its being. It was deliberately planned. It is the first flower garden of the first honeymooners produced in that honey-producing plant. Albert is the happy groom, while the thoughtful look on Carl's face indicates that he will not always be contented to "look at happiness through another man's eyes."

Meanwhile they are going right on making the giant plant still more gigantic, installing machinery still more efficient, and planning other developments which will make the memory of their old strenuous fishing days seem like one long summer holiday. Perhaps the bees themselves have a half-regretful sub-conscious memory of those vanished days before the sunshine and the nectar and bee life itself were organized into a "plant."



Truck and trailer loaded with honey on way to depot.

Chico, Calif.

ADVENTURES WITH HONEY PLANTS

By Leslie Burr

Some Facts and Fallacies Regarding a Few of the World's Famous Sources of Nectar

With the possible exception of those with whom horticulture in some of its branches is a business, I believe that beekeepers, as a class, know more about the general plant life than people of any other calling. Of course there is a reason for this, as the plants are the source of the honey that their bees gather. Then too, a good beekeeper is just naturally a keen observing sort of a fellow. If he is not a good observer, he is not a good beekeeper.

I don't want to convey the idea that apiarists are never in error concerning plant life, for it is one of the easiest things in the world to get misinformation even about well known plants. Take sweet clover for an example: twenty-five years ago the way the average corn farmer in Illinois hated sweet clover was a fearful thing to observe. I knew some farmers, in the neighborhood of Gardner, Illinois, that used to lie awake nights contemplating what would happen when the sweet clover that grew along the roadsides invaded their cornfields. The fact that this same sweet clover had been growing along the roadsides for years and had not invaded the cornfields meant nothing to them. They just knew that some day it was going to take the land, and beekeepers were responsible for spreading the fearful pest.

As to this charge, that beekeepers spread sweet clover, I was always ready to admit that I was guilty, and not only that, but I took considerable pride in my efforts, particularly at a certain mine dump at Braceville, Illinois, where I had sweet clover growing and where nothing else had the courage to take root. In fact, some twenty years ago Gleanings published an illustration of that mine dump. The mine dumps are largely made up of soil which, in prehistoric times, produced the vegetation that time and

nature has turned into what we now call coal. It seemed to me then and still does today, that the fact that sweet clover was the only thing that seemed able to grow on the old prehistoric soil of those dumps is a matter of considerable interest.

Sagebrush.

The plant about which there is probably the most widespread misconception, is sage. Dating from the discovery of gold in California in '49, practically every author of western stories has mentioned "sagebrush." It makes no difference whether it is mountain or plain, the beautiful girl in the story always rides the wild unbroken bronco—or perhaps it is a Kentucky thoroughbred—through the sagebrush. As a result of our western fiction, on my first trip to California, as soon as Denver, Colorado, had been left behind, I was on the lookout for sagebrush.

As I was a stranger to sage, and saw that all the vegetation was not the same, I began to make inquiries among the passengers as to which was sagebrush. The first men I asked said that they supposed all the brush was sage, but finally I found one passenger who lived in California, and he informed me that none of the vegetation in view was sage, but that he would point the plant out should we see any. Well, I asked him the name of about every plant we saw from Ogden to San Francisco, but no sage did we see. In fact, my first glimpse of sage was after I arrived in the Simi valley, about five hundred miles south of San Francisco. As a matter of fact, many of the authors of western stories do not know sage when they see it, and I have an idea that a good many of those who write so glibly about it, never have laid eyes on the plant. The fact is, that with a large number of people in the West, especially those originally from the East, sagebrush is a generic term for all low-growing vegetation. Everything, from manzanita and scrub oaks to wild alfalfa and buckwheat, they call sagebrush.

Another interesting feature of the popular misconception of the average person concerning western vegetation is that about every other person will point out some particular plant they call "chaparral." Now chaparral is from the Spanish, and while the term comes from "chaparro," the name of a small live oak, chaparral is used as a generic term to describe thickets of thorny shrubs and brambles. The hair-covered leather pants worn by cowboys are generally called "chaps," which is but the shortened name for "chaparejos," as the Mexicans call them, a translation of which is "brush pants," since they are worn as a protection from the brush and thorns of the chaparral.

California Wild Buckwheat.

When I first came to California I supposed that the California wild buckwheat was the real buckwheat, the *Fagopyrum esculentum*, gone wild. I questioned a number of beekeepers about this plant, when they told me about "buckwheat honey," and they all admitted that I was right, that the California wild buckwheat is a wild species of the buckwheat of the East. After I had been in California about two months I saw my first wild buckwheat, the *Eriogonum fasciculatum*. If a person is far enough way, say about a hundred yards, the so-called California buckwheat, when in bloom, has a resemblance to the true buckwheat. But don't get nearer than a hundred yards, as the plant will be seen for what it is—a desert weed that is about as near kin to buckwheat as is the wild onion.

Once, in southern California, when the subject of California wild buckwheat was being discussed, I described the true buckwheat, and told how good buckwheat cakes are for breakfast, on a cold winter morning. When I finished my description, a young lady who formerly had been a high school teacher, looked at me and remarked, "Is that a joke, or is there really and truly such a grain with such a funny triangular shaped seed, and is it really made into flour and used for griddle cakes?"

The Mangrove.

I think that of all the plants noted as producers of honey, my curiosity concerning the mangrove was whetted keener than with any other. The reasons for this were, first, the mangrove had the reputation of being the greatest yielder of nectar of all the plants on earth, and second, at the time I was so desirous of seeing it, the trees were growing in profusion but a few miles away, yet I was unable to reach them. This was during the years 1902 and 1903. I was in Pinar del Rio Province, Cuba, at the time. Twice during that winter I tried to reach the mangrove by going south from Candelaria, but there was too much swamp and jungle for a bicycle.

The mangrove is a tree that grows only in the tropics and sub-tropics, in salt-water swamps along the sea coast, and there is a strip of it along the south coast of western Cuba. But to reach the south coast from the interior of the island, even though it is but a few miles, is not always an easy matter.

In the early spring of 1903, however, I heard of a certain trail that led to the sea. The story was that during the revolution filibusters from Florida landed

arms and supplies for the Cuban revolutionists on the south coast, and that this particular trail led through the jungle and mangrove swamp to the point where the filibusters had brought the supplies. A party of three of us made the trip. It was just before the spring rains, and during the driest time of the year, and we were able to get within half a mile of the mangroves on bicycles.

At about half a mile from the mangroves we reached what is called the "savana del mar," which is a strip of grass covered swamp, and separates the jungle from the mangrove forest. From this strip of grass swamp to the coast, through the mangroves, was about half a mile. Here the trail was a corduroy road, with water over it from six inches to two feet in depth. This stagnant salt water looked and smelled as though it was the same water that was standing there when Columbus discovered the island. And as to mosquitos; we tied handkerchiefs about our heads and necks, thrust our hands deep in our trousers pockets, and yet those mosquitos found places to bite.

At the end of the corduroy road there was a small strip of beach about a hundred yards long. A gentle breeze was blowing from the Caribbean sea, which fanned the mosquitos back into the swamp, so we were able to look about us in comfort.

Looking back over the route we had just traveled, we could see, on both sides of the corduroy road, the black mangrove, about the trunks of which was water of about the same depth as that over the corduroy road. Protruding above the water for a few inches were many shoots or sprouts of a blackish color, in form and appearance not unlike asparagus tips. The leaves of the trees were dark green, with here and there a small amount of bloom.

At the ends of the little strip of beach on which we stood, began the red mangrove. This was growing right in the ocean; it is the advance guard of the black mangrove. The red mangrove is a tree that might be said to be without beginning or end. When it gets tired of being a tree, it merely bends down, enters the mud of the ocean bottom and becomes a root.

We found no bees on the blossoms, which was not due to the fact that there were no bees within flying distance, for on our return we found, but a short distance from the mangroves, a dozen or so colonies in native log hives. Those colonies at the time were working but little, but there was evidence of a recent honey flow as freshly built combs protruded from each end of the open logs. The odd thing about the comb was that the wax was red—as red as red paint.

In after years I once worked bees where they had access to a small number of mangrove trees, and the bees worked it. But there was nothing spectacular about the way they worked on the blossoms, nor the amount of honey produced.

Buckwheat and Alfalfa.

As most people know from experience, all bees will sting, and sometimes bees will become regular stinging fools. As a rule, though, the beekeeper is at fault, either in his management or the kind of bees he has. But there is one exception to this, and that is, when the bees are working on buckwheat. When I say "buckwheat," that is what I mean, and not the desert weed we have here in California.

When there is a good honey flow from buckwheat in New York State, the honey in the hives can be smelled two hundred yards away, if the wind is right. The bees are on the lookout at about the same distance, and those lookouts sting. They don't just buzz around. Not only do the bees sting, but they rob just as readily as they sting, regardless of a honey flow.

Just why bees should become robbing fools when buckwheat is yielding, I do not know any more than I know why bees will not rob when they are getting honey from alfalfa. In Colorado, at a time when there was only a light honey flow from alfalfa, I once saw a hive cover with a pound or so of honey on it, placed outside the honey-house. Two weeks later the honey was still there. Not a bee had touched it. On another occasion I saw a super of comb honey that had been overlooked. It stood by the side of the hive from which it had been taken, for a week, and not a drop of honey had been removed, or the combs injured in any way.

Only once did I ever hear of bees robbing when alfalfa was yielding. That was in a Colorado apiary, where several supers of comb honey were overlooked after having been removed from the hives. A week later when the apiarist returned to the yard he found that the bees, while not touching the honey, had robbed the sections of the propolis.

Eucalyptus.

The first time I ever saw the word eucalyptus in print was in Gleanings, in an article by Rambler wherein he described the tree. Some years later when I first came to California, I saw plenty of the blue and red gum varieties. But it was not until I went to San Diego in 1910 that I really became interested in the tree. There I had ideal conditions

for studying it. For there in Balboa Park, which is some 1400 acres in extent, is to be found about every kind of eucalyptus that has been brought to California. There is also in the San Diego Public Library, but a few blocks from the park, a considerable literature on eucalyptus, of which I made frequent use. I also had a small apiary on the roof of the house where I lived. So there was nothing lacking as far as I was concerned.

So far as the average person in California is concerned, there are four kinds of eucalyptus; the blue gum, white gum, red gum, and all others are just eucalyptus. The reason for this is that of the hundred and forty or more kinds of eucalyptus, only a few have received common names, and the average person has no time for or interest in scientific botanical names.

The blue gum is the *E. globulus*, and is the most common variety of the tree in California. There are also some eight or ten other varieties that are known by the common name of "blue gum." Likewise there are a dozen or so that are known as "white gum."

The blue gum, that is the *E. globulus*, secretes nectar quite freely, but I do not care to recommend the honey. Still, we have the example of the people of the East having acquired a taste for the strong black buckwheat honey. Perhaps when enough New Yorkers come to California, there may be created a market for blue gum honey.

I did not find the blue gum quite as profuse a yielder of nectar as *E. robusto*. This variety is quite common in San Diego, also in Hawaii. Large numbers of them are growing along the streets in San Diego. The tree is also known as "bastard mahogany." As to the honey from this tree: if anything, it is worse than that from the blue gum.

There is at least one eucalyptus that makes up somewhat for the shortcomings of its brothers. This is the honey gum, the botanical name of which is *E. melliodora*, if my memory is correct. But the tree is worthless, or nearly so, for everything else but bees. So there is little chance of many of these trees being planted. From my observation of the honey gum, which covered about four years, I am of the opinion that there are few, if any, blossoms of any kind that yield nectar more freely.

The Hawaiian Algarroba.

The word algarroba is Spanish, and some fifteen or so different species of the tree are known. The particular variety that grows in the Hawaiian Islands is quite generally conceded to be of more value to the islands than all the other trees growing there. Without the algarroba the cattle industry, as it now exists, would be impossible. It is also the source of fuel for the thousands of plantation laborers, and it is the honey plant on which the bee industry of the territory depends.

Honey production is carried on in Hawaii on a more extensive scale than anywhere else in the world. For example, the Cook Ranch of Molokai, where bees are but a side issue, has harvested crops of 250,000 pounds of algarroba honey.

The tree is very similar to the mesquite growing along the Mexican border. While the general impression is that it is a much larger tree than that which grows in Texas, I have seen mesquite growing on fertile bottom land, along the Rio Grande in Texas, that were as large as any of the Hawaiian trees.

During the seven years I lived in Hawaii, there were two things concerning the algarroba there that I tried to settle to my own satisfaction. The first was, where did the tree come from, and second, is, or is not, the tree an acacia?

As to what part of the world it came from, I first exhausted the Public Library, without much satisfaction. Then I began to ask questions of beekeepers and others. In almost every instance the person with whom I was speaking would say, "By the way, have you ever talked with Father Valentine about the tree?"

So finally I called on the father, and asked him what he could tell me about the algarroba. His reply was, "There is not much to tell." Then he went on and told me what he had been able to learn concerning the tree. The seed was brought to Honolulu by Father Bachelot about a hundred years ago. Father Bachelot planted the seed and later this tree was spread over the land by cattle, the seed being indigestible. The seed was given to Father Bachelot in Paris, and came from the Royal Gardens. The Royal Gardens of Paris are not now in existence, and there is no record of how the algarroba seed got there, or where it came from. The supposition is, however, that the seeds were sent to Paris by some father in South America. Anyway the custodian of the seed in Paris considered that the tree would do well in Hawaii, and so gave the seed over to Father Bachelot when he started for the islands. Time has proved a million times, by the millions of trees now growing in Hawaii, that he was right.

As to whether the algarroba of Hawaii is, or is not, an acacia, I am satisfied that if it is not, it is the next thing to it. So my two problems still remain unsolved.

Willetts, Calif.

A LIVE BEEKEEPERS' ASSOCIATION

By E. G. Carr

Some of the Accomplishments of the New Jersey Beekeepers' Association

[This is the season for the winter meetings of beekeepers' associations. At these meetings policies will be outlined and plans formulated for the betterment of the beekeeping industry. The benefits from the work of these associations accumulate year after year, so that it is difficult to comprehend the vast amount of good that is accomplished over a period of years. In this article, E. G. Carr sets forth some of the achievements of the New Jersey Beekeepers' Association from its beginning in 1902 to the present time. Mr. Carr has acted as secretary of this association during the past 12 years and has had much to do with its success. Similar work is being done in many other states so that in the aggregate there is a vast amount of benefit to beekeeping brought about in this way. However, probably the greatest need of every one of these orgasizations is better support by beekeepers.—Editor.]

"When in the course of human events it becomes necessary" for beekepers to take steps to protect their interests against the ravages of brood diseases of bees, it immediately becomes evident that organized effort is essential. This was the situation in New Jersey and the climax was reached when, after consultation with J. H. M. Cook and other interested persons, a call was sent out by G. N. Wanser for a meeting to be held at New York to consider the matter of legislation intended to control bee diseases.

This meeting was held at 62 Cortlandt street on January 4, 1902. Six persons were present. A temporary chairman, B. F. Onderdonk, Mountain View, and a temporary secretary, G. N. Wanser, Cranford, were elected. One week later, January 11, another meeting was held and the permanent organization formed. The temporary chairman and secretary were elected, also three vice presidents, viz., W. W. Case, Baptistown, J. D. Craig, New Germantown (Oldwick) and H. N. VanDuyn, Boonton. A delegate to the annual meeting of the state board of agriculture was named.

The objects of the association as set forth in Article II of the constitution are "to advance the bee industry of our state; to protect the interests of our members and to plead for the enactment of a law to suppress contagious diseases among bees." At the third meeting in New York City on March 1, 1902, the matter of affiliating with the National Beekeepers' Association was discussed, and laid over. The question of incorporation was also discussed but no action was taken. On October 2, 1902, April 4, 1903, and January 9, 1904, meetings were held but no matters of special significance were noted. On September 7, 1905, the New Jersey Beekeepers' Association joined with the Pennsylvania Beekeepers' Association and the Philadelphia Beekeepers' Association, in a big meet at the A. I. Root Company's apiary at Jenkintown. Beginning with January 16, 1907, annual meetings the first part of the year were inaugurated and have been held annually since.

Bee Disease Control Legislation.

The problem of securing disease control legislation was constantly before the members of the association and a constant effort was made to influence legislators and other influential persons in this matter. At the January 16, 1907, meeting Charles Stewart, one of the New York State inspectors, spoke on foul brood in his state; W. W. Case, then president of the associaiton, spoke at the January 19, 1909, meeting on the prevalence of foul brood in New Jersey and the need of legislation for its control and at the field meeting on June 26, 1909, Dr. E. F. Phillips told of the spread of foul brood in the eastern states and the imperative need that New Jersey enact a foul brood law. On December 18, 1909, at a meeting in Trenton, C. B. Howard, Romulus, N. Y., explained the New York bee disease control law and the way in which its passage was secured. He advised New Jersey beekeepers to interest legislators in the enactment of a similar bill. At this time Harold Hornor, who was interested in fruit-growing as well as in beekeeping, suggested the advisability of securing the endorsement of the State Horticultural Society in the legislative enactment efforts. Acting on this suggestion a committee was named to secure this endorsement if possible. At each session of the legislature an effort was made to have the desired bill for bee disease control enacted. The principal difficulty seemed to be in getting the lawmakers seriously to consider the matter.

After the interest of the State Horticultural Society had been secured, a bill was passed by both branches of the legislature but was vetoed by the Governor, who gave as his reason, he did not believe so slight a matter as the possession of diseased bees should be considered a misdemeanor. Finally on March 28, 1911, success crowned the efforts of the courageous ones who had stuck to the job and the bee disease control bill became a law which has since well served its purpose. Thus was accomplished one of the objects for which the association was formed.

The prosecution of the bee disease control work was, by the bill, put into the

hands of the State Entomologist with deputies to care for the field work. Charles S. Sharp served as deputy for eight months, followed by the writer, who, at this time, is still acting as deputy. The great increase in shipments of bees over the country and the spread of American foul brood to hitherto clean areas, showed the need for safeguards against reinfections from this source. Accordingly, through the efforts of the deputy bee inspector, a bill was approved on March 30, 1915, providing that bees coming into New Jersey on built combs must be certificated.

During the time the greatest efforts were being put forth in securing needed legislation, the other two objects of the association were being advanced. The gain in membership was rather slow. Educational processes, however, usually are slow and it should be remembered that much of the success which has come to the association in later years is due to the efforts of those who did pioneer work.

Field Meetings.

A field meeting was called for Three Bridges on August 20, 1904, but unfavorable weather conditions brought this effort to naught. The first field meeting was held at Harold Hornor's apiary, Mt. Holly, on June 26, 1909. From the beginning these meetings proved popular. Apparently beekeepers are interested in seeing operations in the apiary. It is also evident that the social nature of these meetings which have some of the features of a picnic, proves attractive to many.

These field meetings have grown in interest and attendance from one in 1909 with about 40 persons present, to nine in 1923 with an attendance of 239. The average attendance has shown a slight tendency to decrease as the number of meetings have increased. It is believed, however, that the larger number of meetings scattered over the state, render greater service than the smaller number.

Educational Activities.

Aside from the summer field meetings, an annual convention has been held. For these meetings the best apicultural talent of the East has been secured. Since 1918 these annual meetings have been held during Agricultural Week when all the agricultural societies of the state hold regular or postponed meetings under the auspices of the State Department of Agriculture. Because of this close co-operation it has been possible for the officers of the association to secure from the department considerable financial assistance in securing speakers from a distance.

Through the efforts of the State Entomologist, Dr. Thomas J. Headlee and the deputy bee inspector, three publications for beekeepers of New Jersey have been issued by the State Department of Agriculture. In 1915 "A Manual of Bee Husbandry" (72 pages) was sent to the entire mailing list of about three thousand beekeepers. In 1917 Circular No. 3, "Bee Disease Control" (30 pages) was issued in like manner, and in 1922 a revised and enlarged edition of "A Manual of Bee Husbandry" (91 pages) was issued as Circular No. 53 of the Department of Agriculture.

In order that information of special interest to members of the Association might be furnished them periodically, a four-page printed pamphlet was first sent them March 1, 1922, under the title, "Hints for Beekeepers." The title was changed to "New Jersey Bee Culture," and three other issues mailed in 1922 and five in 1923. This is financed entirely by the association.

Group of beekeepers at one of the 1923 field meetings.

Many two-day schools for beekeepers have been held in various parts of the state by the deputy bee inspector. These have proved to be very valuable.

Educational Exhibits.

During four successive years educational exhibits were made by the association at the Inter-State Fair at Trenton. These have been discontinued, but for the past three years a similar but more elaborate exhibit has been made at the Armory at Trenton in connection with the annual farm products show. Through these displays it has been possible to reach beekeepers with needed information and the public with information regarding honey and beekeeping.

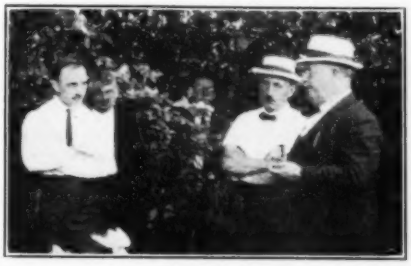
Research in Beekeeping Problems.

The need for work on the problems connected with New Jersey beekeeping which could not be carried on simultaneously with bee inspection by one person, became so great that in 1921 it became apparent that someone was needed with the proper training who could devote his entire time to the work. Two of these problems are so closely related to fruit growing that it was decided to secure, if possible, the endorsement and help of the leading fruit growers of the state in an effort to secure from the state appropriations committee the funds necessary for the research work.

The funds were secured and Ray Hutson is now carrying on, under the direction of the station, studies to determine (1) a method whereby damage to bees in sprayed orchards may be avoided; (2) the value of bees as pollinators of tree fruit blossoms and the number needed for a given area; (3) the nature of and remedy for an adult bee disease which has caused much loss in restricted areas in the state, and, (4) testing and breeding improved strains of bees as to disease resistance and honey production.

Membership and Officers.

The increase in membership has been the most rapid since the inauguration of field meetings. These, it is believed, have been large factors in stimulating this growth. At the same time due credit should be given to the cumulative effect of the work done through the previous



State Entomologist Dr. T. J. Headlee (right) discussing bee research work with Harold Hornor (middle) and Geo. S. Demuth (left).

years. The maximum number of paid-up members was reached at the close of 1922 when it was 616. A member delinquent for dues for one year is dropped from the roll. It will be seen that of the three thousand odd beekeepers listed in the state, six hundred and sixteen are members of the association, or one of every five.

On two officers of the association, the president and secretary, falls the larger part of the work. The president largely shapes the policies and the secretary executes them. There is no intention, however, to belittle in any manner the efficient and valuable work which has been done by members holding no official position, as their work is vital and necessary for the continued success of the association.

Pennington, N. J.

Group at beekeepers' field meeting at Harold Hornor's apiary.

FROM THE FIELD OF EXPERIENCE

FALLING LEAVES

The Romance and Utility of Autumn Leaves. Their Use for Packing Bees

There is a peculiar feeling at this season, in walking through the forests or parks with rustling leaves underfoot so sweet and clean while the air is mild and bracing.

I have often wondered if the pleasure of hunting wild game in autumn does not consist more in the charm of tramping through the fallen leaves than in killing wild animals. It was never a pleasure for me to kill anything. Well, I will except spiders, when I find they have spun a web in front of a hive to trap some unsuspecting bee and catch it alive. And toads that sit close to the hive entrance with eyes like jewels, tongues of lightning and hearts of stone, to gobble up every bee that comes near them. Snakes, likewise, I have no love for, for they, too, swallow their food whole if it takes a fortnight to do so. Besides there is a tradition that one played a mean trick on an innocent woman in a garden long, long ago.

Then there are skunks. I don't exactly like to kill them, but I am perfectly willing some one else should, for they come at night and claw at the entrances of our hives as though they were belated travelers, and when the bees rush out to see what is the matter, the skunks catch them and eat them, as though their lives depended on it, and the inch of fat on their ribs was not enough to carry them through the winter. Our state game warden has wisely given permission to trap them in bee yards out of season and one trapper bagged eight in two of our yards this very week. Let's see? I was writing about the falling leaves. I fear I have run off the track.

Was ever anything more beautiful than the falling leaves, red, yellow, orange, green and russet? They look as though painted by woodland fairies. Was ever carpet in parlor or hall more charming than the one this old earth spreads for herself every autumn? How restful to walk through the leaves! How they rustle! What music to tired nerves! No one is too old to enjoy them. How noiselessly they fall from the trees. One, two, three, a dozen at a time. Many times have I mistaken them for flocks of birds flying through the air. And when the wind rises they drift into piles or fill hollows where we may go in midwinter, remove them, find the earth still unfrozen, so that we can fill a flower-pot for the little mother, for some choice plant which a friend has given her. How clean they are! How sweet they smell! Children delight to romp and roll and play in them. And it is good for them, too, to do so.

Leaves have an interesting history. After they have spent their lives in sifting carbon from the air, water from the sap and doing other necessary work, they drop to earth to protect it from the changing temperature of winter.

They are a good non-conductor of heat, indeed one of the best. We may use them for banking the house. They are fine for bedding the horse or cow. I used to lay in a large supply years ago for this purpose, but now we buy our milk and no longer enjoy the kindly face of a Jersey with her wonderful eyes and pail of creamy milk.

Leaves are good, too, to pack our hives and protect our bees from the piercing cold of our northern winters. Indeed, if properly prepared there is nothing better. They improve with age. They are good this year but better next. They are a little stiff when first gathered and do not lie down completely and it is better to lay something on them to hold them in place. Better still, put them in a large burlap sack to lay on top of the brood-chamber. The first year they will seem rather loose unless pressed down firmly, but next year they will crumble and hold the heat of the hive in great shape.

There is, of course, a great difference in leaves. Some are soft and fluffy, while others are coarse and stiff like those from the horse chestnut. The soft, small ones are the best to pack our hives with; the leaves that will hold the most air and keep it from circulating, for after all it is the air that keeps our bees warm. First in value as packing material is cork dust, then comes soft pine shavings and next well-dried leaves and coarse planer shavings. But many will be so situated that they can not get the best and they will appreciate the value of leaves.

When you gather them, do not try to handle them in a bushel basket but rake them into piles, then prepare a cloth or sheet about two yards long and the same width and then sew the opposite ends over a light stick or pole. Taking one end in each hand, throw the sheet over a pile of leaves and you can scoop two or three bushels at a haul. We must work

fast in these days of automobiles, telephones and radio if we would not be left behind, and learn to use our time to best advantage. J. E. Crane.

Middlebury, Vt.

ARCHITECTURE OF HONEY COMB

The Construction of the Cell has Excited the Wonder of Most Celebrated Mathematicians

Maurice Maeterlinck in his book, "The Life of the Bee," records the fact that Reaumur, early in the eighteenth century, suggested the following problem to the celebrated Swiss mathematician Koenig: "What would be the size of the larger angle of the rhombs at the base of the bee's cell, if it were so built that it would use the least amount of wax to contain a given amount of honey."

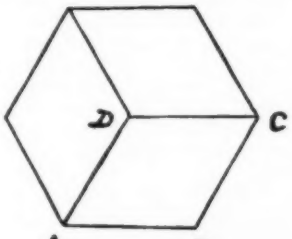


Fig. 1

The three rhombs which form the base of the cell in the honeycomb.

The word rhomb is the correct name for the three lozenge-shaped figures at the base of a cell, as shown in Fig. 1. The rhombs are also shown in perspective in Fig. 2, which represents a transparent cell; the dotted line representing a flat-ended hexagonal prism of the same capacity as the cell; the thin lines would be invisible if the cell were opaque. The angle that Koenig was asked to find the size of, is ABC, or ADC, which are equal.

Koenig answered that the angle was 109°, 26′; this he had found by means of the calculus, and he said the problem would have been insoluble to the ancients, as the calculus was unknown to them.

Another savant, Maraldi, had measured as exactly as possible the angles of the rhombs constructed by the bees and found that the larger one measured 109°, 28′. Between these two results there is a difference of only 2′, which is an almost invisible angle, it is so small. However, it was not the bees who had departed from the most economical shape; for Professor Maclaurin of Edinburgh, in a paper contributed to the Royal Society in 1743, showed how it might have been solved geometrically by the ancients, and found the angle to be 109°, 28′. 16″. Colonel I. F. Forbes of the British army recently calculated the angle and found it to be 109°, 28′, 16.349″.

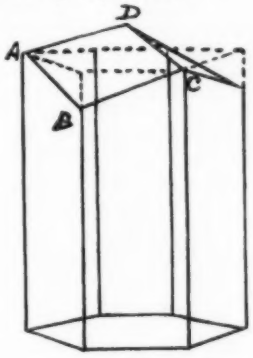


Fig. 2

The angle at B or angle ADC, which is its equal, is the angle which has greatly interested matematicians during the past.

In Fig. 3 is shown a square-ended hexagonal prism, with one of the rhombs ABCD, similar to those of a bee's cell, in position. B is the point at one of the corners of the prism, so that the angle ABC is 109°, 28′ 16″. A plane is cut through this point B, and the line AC, up to the point D, which is on the axis of the hexagonal prism. We now see

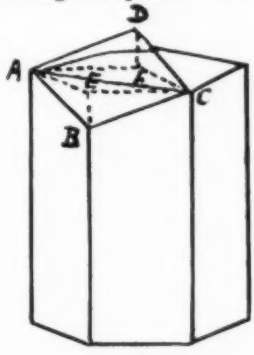


Fig. 3

Pyramid ABCE, cut off the hexagonal prism by the rhomb, is equal to pyramid ACDE, which is added to the prism but less wax is needed for this construction than for a prism with a flat base.

that the pyramid, ABCE, which is cut off the hexagonal prism by the rhomb, ABCD, is equal to the pyramid, ACDF, which is added to the prism. It follows therefore, that the bee's cell holds exact-

ly as much honey as if it consisted of a hexagonal prism, with a flat end, passing through AECF, but with this interesting difference, that the bee's cell has less surface than the flat-ended prism, and takes the least possible amount of wax to hold a given quantity of honey.

If you shift the point B up or down the corner of the prism, the cell formed would still contain the same amount of

Fig. 4

A flat base between the cells on the opposite sides would not only require more wax to build cells holding any given amount of honey, but would also be a weaker construction than that used by the bees.

honey, but it would take more wax to make it, if the angle ABC is not as stated above.

One would suppose that if the bees had built their cells exactly back to back, as shown in Fig. 4, that a flat division wall GG, would have divided the two cells with the least consumption of wax. One naturally thinks that a flat division wall must be more economical of wax than an indented one such as the bees employ, but it is not so.

The bees have adopted the most economical method, and the strongest, because the base of the cell is greatly strengthened by being buttressed by the ends of three cell walls on the other side of the base.

Was this construction of the comb cell thought out by some female Archimedes among the ancient honey bees, when they drew away from the less organized families of Anthophila? Did she rush up to the queen shouting "Eureka, I have discovered it"? The intelligence of the hive is so great, we would like to believe that the form of the cell was due to the brilliant working of bees' brains; but we reluctantly think it more likely due to blind obedience to divine guidance.

W. B. Wallace.

Ickham Hall, Canterbury, England.

BUILDING UP COLONIES IN WINTER

How Bees are Prepared for February Honey Flow in California

Several years' experience as a "back-lotter" has taught me that along the cool, windy coast line of central California, to secure a crop of honey, bees must be handled somewhat differently from any methods found in the bee books. So far I have not succeeded in securing a crop of comb honey. The nights are so cool that work in a comb honey super does not progress and the sections are always badly finished. Next spring I expect to try a heavily packed super, in the hope of overcoming the chill of the nights. Except in an unusual spring, however, a fair crop of extracted or chunk honey may be obtained. It does not seem difficult, if the colonies are not allowed to run down too much, to get from 50 to 100 pounds per colony.

In the first place the crop of bees must be raised early, the honey crop coming in February, March, April and May. This is difficult, for the nights are very cool then, and while the sun shines warm during the day a good deal of the time, the air in the shade is cold; hence many bees that are tempted out become chilled and never get back to the hive. The mortality from this cause makes building up in the winter very slow. The chill of the nights can be overcome, to a great extent, by reducing the number of combs to what the bees can actually cover, putting in a division board and then packing in newspaper at the top and sides. A windbreak on the west and north is also necessary.

I do not find the ordinary flat hive covers satisfactory. They generally warp so that they do not fit closely after the first season's use. Neither is the metal roof cover with inner cover good here as there is too much propolis in this region. The metal roof covers are two and one-half inches deep, inside measure, so I nail a cleat around the hive, 2¼ inches from the top, for the edge of the cover to rest on. I like this arrangement better than anything I have yet tried, as it is windproof, there is no sticking tight with propolis nor any killing of bees when putting on the covers.

The queens lay very little during October and November and practically none in December, though the bees usually continue to fly during these months, so that colonies that were strong frequently dwindle until, by the time the queen begins to lay in January, they are little more than nuclei.

In January and February we have a different problem. During these months the flow from the blooming eucalyptus or gum trees is very heavy. Ordinarily few or none of the hives will be full of bees, consequently super work is usually impossible. When a few warm days come, the bees fill the brood combs with honey, placing it, of course, within the cluster, thereby checking brood-rearing just at the time when most needed. Then, if there are young bees emerging and the weather is moderate, I separate the brood

frames and insert a dry empty comb for the benefit of the queen. She generally gets a good many eggs in it before the workers pre-empt it for honey. This spreading of brood, however, can only be done when there are sufficient bees not only to cover the brood, but the honey also. This trick of filling the frames with honey interferes considerably with the increase of brood, but outside of the insertion of dry comb, which must be done with a good deal of discretion, I have found no remedy.

This year I tried, in February, putting a super containing four frames of drawn comb on one hive that was so filled with honey that they did not gain in brood nor bees. There were five frames containing brood, most of them half filled with honey, the comb built out as far as possible and capped. There were bees enough to cover easily twice the amount of brood, if everything had not been jammed with honey. After the super was put on, the brood-chamber and super were packed with newspaper. It did no good, no honey being placed in it. I am inclined to think that the only real solution of the difficulty lies, not in trying to build up after the honey flow starts, but in not allowing the colonies to run down. For as the heavy honey flow begins about the time the queen starts laying in late December or early January, there is little opportunity to build up. When a few days of good weather come, which is likely to happen in January and almost sure to happen in February, the colony will fill its brood combs almost solid with honey. If the colony can be kept strong, this honey instead of choking the brood nest, can be put into supers. But to do this the colony must be strong enough when the good weather comes to have at least seven combs (eight is better) out of the ten, filled with brood. Weaker colonies will not enter the supers.

By the first of June the crop, unless we have unusually late rains, begins to decrease and July sees its finish. This year, owing to a shortage of rain last winter, the flow began to diminish in May. The bees must be kept the rest of the year without any honey flow to speak of. I aim to have as much of the crop sealed as possible early in June, when I remove it, giving a hive body with full depth frames. In good years these will be fairly well filled with dark honey, which is good enough to feed bees. The quality of honey for wintering makes little difference here, as the bees are seldom confined for more than a week at a time. Unless the precaution is taken to have extra frames to give the bees when winter sets in, they are likely to starve before spring.

Queens here lay, more or less, nearly eleven months of the year. December is the only month in which one is apt to find no brood at all. None of the queens seem to last over two years, and most of them only one year, the bees superseding them in June or July. In requeening, if I raise my own queens I do it in June or July, during the last of the honey flow. If the queens are to be bought, which it is necessary to do frequently in order to keep pure or nearly pure Italians, it is done in September or October. Some of the queens will be so worn out that by September there will be almost no brood in the hives; these are replaced with young queens, as the old ones will be entirely useless by spring. Queens do not mate as soon after emerging as they seem to in the East, the average with me being seventeen days. Possibly this is due to the cool weather.

Altogether this is no bee paradise, but when one has once kept them, it seems impossible to stop. Also there is much satisfaction in overcoming the difficulties of cool weather, wind and early bloom, and keeping the family in honey.

Berkeley, Calif. E. D. Crowl.

PACKAGES FOR WINTERING

Another Advocate of Killing Bees in the Fall and Purchasing Packages in the Spring

I handle from 75 to 80 colonies each season. I buy 50 packages every spring, then in the fall I take all honey away from 50 and pack the remaining 25 to 30, since I have winter cases for only that many. I estimate that the 40 to 45 pounds of honey the colonies consume for winter, the expense of packing cases and the labor will be ample to purchase again in the spring. This saves the winter losses, and all work can be done by Sept. 15 after which there is no more work till the package bees arrive, usually about May 1. I make as much per colony from my packages on an average as I do from my wintered-over colonies. Those who can not devote all their time to the bees will find it profitable to purchase packages from the South and save the cost of honey, cases, packing and winter loss. I have been doing this for the past five years, and it works well. L. T. Leach.

Orillia, Ont.

[Under some conditions this plan will, no doubt, work out well but it must be remembered that the labor of packing and unpacking is partially if not wholly offset by the labor involved in taking away the honey and destroying the bees in the fall and by the labor of installing the packages in the spring.—Editor.]

ITALIAN BEES IN BRAZIL

How Pure Italian Queens are being Distributed by the Department of Agriculture of Brazil

It was four years ago in November that I landed in Rio de Janeiro with my 20 nuclei of Italian bees which I brought from Medina, Ohio. It was pretty cold in New York in October for the one-frame nuclei, but as I started for Hoboken with my bees from Leonard street,

Arthur J. Schenk examining the first Italian queens on their arrival at the government apiary in Brazil.

the sun was bright and warm. A little later I followed my expressman and coming to the piers of the U. S. Shipping Board, I was greatly surprised to find the expressman surrounded by bees, peaceably flying as if they were having a playflight in the springtime. The horses stood patiently and quietly and the public was glad to see a game like that in the streets of Hoboken. I soon discovered the box the inhabitants of which had refused to go to sunny Brazil, and closed it. I instructed the expressman to start at once, leaving the flying bees behind him and also the danger he probably never realized.

The sun was then shining hot and the rising temperature caused great uneasiness among the bees. I was glad when at last I heard the command given to loosen the hawsers holding the boat. But what a disappointment! At the same moment a telegram came and the steamer was obliged to stay two more days at the pier.

The kindness of the officers and all hands on board made the transportation of my bees easy, inasmuch as my wishes were met as far as possible. I spent most of my time near the bees, feeding them sugar tablets laid on the screen, which I always kept moist. I estimated that the bees would not have enough stores for a journey of six weeks from Medina, Ohio, to Porto Alegre, Brazil. So I gave them a week's time in Rio de Janeiro permitting them to have a taste of the beautiful blossoms in this country, but they had become pretty weak by this time and could do very little harvesting.

During my stay in Rio de Janeiro, I made good use of my time by consulting the Minister of Agriculture, working out a plan to distribute the Italian bees in this country in the best manner. The commission was given to me to take all the bees to Porto Alegre, to the Agricultural School of that state, of which I was a professor, for the purpose of breeding a large number of young queens. In this we were successful, even though we could not get all of the 20 queens to Porto Alegre alive. One died on the way between Rio and Porto Alegre and one I

Full colonies and nuclei of Italian bees at the Department of Agriculture of Brazil ready for shipment to beekeepers.

left in Rio de Janeiro. Some died shortly after our arrival because it was not warm enough for them in the much weakened one-frame nuclei. According to the calendar, it should be warm here in November, but quite often the wind is very

Beekeepers bring virgin queens to the Department of Agriculture apiary to be mated with Italian drones.

cold at this time along the Riograndenser coast, and I was obliged to leave the bees on deck. Wrapping up with paper did not help them much. Nevertheless we had about half of the 20 queens left for breeding purposes, of the leather-colored as well as of the yellow.

In April, 1921, we held the first national exhibition for beekeeping at the Agricultural School in Porto Alegre. At this exhibition young, pure bred Italian queens were given as premiums. In June of the same year I went to Rio de Janeiro, taking along six of the young mothers. The time had come to establish in Rio de Janeiro a central beekeeping station for all of Brazil. I was commissioned to organize a model apiary at Deodoro, Federal District, Brazil. One of the main objects of this apiary is the popularizing of the Italian race of bees throughout the entire territory of Brazil.

Hundreds of very beautiful queens live today in the bee families of that apiary. We have already distributed hundreds of them as premiums at the Centenary Exhibition in 1922 and some have been sold at low prices. From all parts good reports come in concerning them.

They are mostly shipped in 3-5 frame nuclei (Schenk and Standard system) or in cages by mail. Our mailing cages differ considerably from the North American cages. We put in 100 to 150 escort bees and much more food, and as our mail service is good, we receive many reports that even after a two weeks' journey hardly a dead bee is found.

Nuclei used for mating queens in the model apiary at the Department of Agriculture, Brazil.

I am glad to be able to say to my beekeeper friends in the United States that the greatest difficulties in the work of introducing the Italian bees into this country are now behind us. Inasmuch as the Minister of Agriculture is giving this matter considerable attention and our beekeepers are showing great interest, the future looks bright for beekeeping in Brazil. Emilio Schenk.

Taquary, Rio Grande do Sul, Brazil.

General view of the model apiary at Deodoro, Federal District, Brazil, from which the government distributes Italian queens to beekeepers throughout the country.

COMB HONEY MORE PROFITABLE

So Says an Extensive Producer of Both Comb and Extracted Honey

[F. W. Lesser is well known among the beekeepers of New York State as one of the most successful producers of comb honey in the East. In spite of the fact that he operates eight apiaries largely for comb honey, and measures his crop by the ton, he has avoided publicity through the bee journals, insisting that he is too busy to write articles on beekeeping for publication. Recently, however, he paid a visit to Medina where the Editors of Gleanings were so persistent with questions concerning his methods that he finally consented to write answers to a few of these questions. Following is a group of these replies.—Editor.]

The commercial honey producer must have lots of bees when the good years come to make much money. My average for twenty years has been twenty-five tons, partly comb honey. My largest crop was forty-five tons.

F. W. Lesser (left) an extensive comb honey producer of New York State, talking bees with E. R. Root.

The time to plan for a good year is after one or two poor ones. Go slow after the extra good years as nature generally equalizes the seasons. Locations must be good to make commercial beekeeping pay.

Foul brood is a blessing in disguise. It is nature's way of making many hustle and keeping out of the sluggard class. It helps the big producer by weeding out incompetent competitors and it helps the small beekeeper by keeping the capitalist beekeeper and large companies down to a comparatively small number of colonies. There is a definite limit to the number of colonies which can be managed under one head when foul brood is present. Foul brood need cause but little loss in regions where comb honey can be produced. Many eastern beekeepers would make more money with comb honey than with extracted honey.

I believe the ten-frame hive has done more to discourage the production of comb honey than anything else. The brood-nest is too large after the honey flow begins and after hiving and shaking swarms into them. Did not Dr. Miller, W. Z. Hutchinson, M. A. Gill and about all the early Colorado comb honey men use eight-frame hives with much more success than can be had with ten-frame hives? W. Z. Hutchinson's teachings on comb honey were sound and still hold good.

F. W. Lesser.

Fayetteville, N. Y.

BEEKEEPING IN NEW ZEALAND

A White Clover Region in the Southern Hemisphere where December is Midsummer

November is the general swarming month in New Zealand. In my locality swarming usually starts about the middle of the month. The main honey flow starts here usually about the middle of November and ceases about the middle of January. Brood rearing ceases here in March and does not commence again until about the end of July.

We have in New Zealand a standard hive, the Langstroth; it is the hive that is universally used throughout the Dominion. I think all beekeepers will admit that it is a great advantage for any country to have a standard hive and frame to greatly simplify beekeeping. I think the time is coming and at no distant date, when the Langstroth hive will supersede all other makes, and be the world's standard hive. Out-apiaries are much in vogue in this country. Migratory beekeeping is not practiced in New Zealand as the honey flow starts almost simultaneously from white clover throughout the Dominion.

Most beekeepers here practise annual requeening of all colonies. Some do their requeneing in the spring, but the majority prefer to requeen after the main honey flow. When one is running out-apiaries, young queens are indispensable. The advantages of having young queens heading colonies is well known by all commercial honey producers. By having all colonies headed by young vigorous queens of a good Italian strain, there is less danger of colonies swarming, queens dying of old age during winter, or of non-producing colonies.

New Zealand. John Unsworth.

SIFTINGS

by J. E. Crane

It is surprising how many fads have cluttered up bee literature from the time, fifty years ago, when we were advised to feed rye meal in the spring to stimulate early breeding, to the present when we are told to leave bees out in the cold days of November for that "last flight." I have been watching the bees during the last two falls, for the "last flight," and have been surprised to see how few of them appreciated the privilege and really flew.

* * *

If we compare the number of bees that take wing in that "last flight," with the number that leave the hive in the first spring flight we will be surprised, and I have about concluded that it does the bees that don't fly more harm to let them out, than it benefits those that fly.

* * *

The fact seems to be that it is mostly old bees that do the flying and they usually keep it up after they are put in the cellar, or, if the cellar is so favorable that they will live through the winter, they will disappear in the early spring flights. Read Prof. Jager's article, page 696, along these same lines.

* * *

The experiments at the University Farm at St. Paul, show that more than twice the amount of honey was consumed during the two months of September and October, with the bees out of doors, than during the next five and a half months' confinement in the cellar. A large consumption of stores at this season means activity; activity means a loss of vitality with bees and loss of vitality, in turn, results in weak colonies in the spring. Weak colonies in the spring, of couse, means a light crop of honey.

* * *

In years past the burden of articles on bees was how to secure large crops of honey, and it is a leading theme today, but another matter, quite as important, seems to be how or where to sell it. It would be of great interest to know just how much more honey is produced today in this country than forty or fifty years ago. It must be many, many times as much. Some say we must advertise if we would sell all that is produced at good prices. Leslie Burr says, on page 699, that what we need is not advertising but propaganda. He says, "The principal thing the honey producer needs in order to have his honey propaganda published in the local press is the will to put it across." A better way it seems to me is to invite the editor to visit our yards and honey-houses when our crop is in, and give him our facts and figures, then let him do the writing, as was explained by the Editor of Gleanings in the September number.

* * *

Right along this line of thought, i. e., increasing the demand for honey, is a splendid article by O. B. Griffin of Caribou, Me. His suggestions are excellent. I quite agree with him that it is a great help to get the children interested in eating honey. There is no reason why the dealer in honey should not be as wise as those who deal in tobacco and give them a taste now and then.

* * *

Two important articles on honey for automobiles appear in November Gleanings in Bee Culture—one by J. A. Green, page 708, and one by Allen Latham, page 713. Mr. Green tells of its good points while Mr. Latham writes of its defects when used for this purpose. Mr. Green says we must adopt "business methods" in introducing it; that it should be sold "through regular trade channels," and we should do the "mixing ourselves." It should have a "trade name," and he suggests "Hydromel Anti-Freeze Compound." The solution must be put in "regular sized packages," gallon size, I presume, and all nicely labeled, the strength of the solution or the degree of temperature it will stand without freezing being indicated on the label, as well as directions for using it.

* * *

Mr. Latham is not so enthusiastic. He is an extensive beekeeper and as much interested in the sale of honey in a good market as any of us. He, too, would be glad of an opening where a few million pounds of our poorer grades of honey could be disposed of. But Mr. Latham has a scientific mind and many years of scientific training, and he looks at this question not as he would like it, but as the facts of his experience warrant and he is to be congratulated for frankly giving his experience, even though it is not as he or we might wish. We have learned long ago the corrosive power of honey and water, and we know that nothing will ruin a tin feeder quicker. We also know of the disposition or tendency of unripened honey to ferment. Suppose some of these honey solutions should start to ferment, what would be the result when opened?

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.

December in southern California brings only cooler weather and the beginning of the rainy season. This is practically the only indication of the season called winter that we have. In our old schoolbooks we were taught that the seasons in the tropics are the wet and the dry, while those of the temperate zones are spring, summer, autumn and winter. Since coming to southern California we have become pretty well convinced that the former conditions exist rather than the latter. In one locality or another bees gather honey every month in the year. The eucalyptus furnishes one source of winter and spring honey upon which some of our successful beekeepers disagree. Many value the eucalyptus very highly. Others say that they move their bees out of the reach of the eucalyptus as the loss of field bees is too severe if they work on the eucalyptus during the winter and early spring. So we must study and know our conditions and surroundings and each work our affairs to the best of our knowledge.

I was surprised to hear a man who got one of the best crops in the orange district this year, make this remark: "If my bees had been as strong as usual, I could have made much more honey." Even the wisest of us can always see where we could have done better. That is what spells success and will continue to make beekeeping popular with some of us.

Buyers are seeking out all of the small lots of honey still in the hands of the producers. Only a few have any honey on hand, the large majority having disposed of their crop. Prices on strictly white orange are firm but the darker honey is not so much sought after. While I am on this subject, I cannot refrain from again expressing the opinion that too little attention is given by the small producer to home and nearby markets. If southern California is any example, the enormous increase in the number of roadside stands will provide a wonderful market place for honey. Hundreds of thousands of people buy much of their food at these stands. Fruits, vegetables, canned goods, bread and butter are among the goods carried. In fact, many of them are well-stocked grocery stores. Many kinds of goods are on display. Autoists drive up for gas and while waiting look around for something to take home for supper or breakfast. What is more appealing to the sense of vision than an attractive glass jar filled with a good grade of honey. Beekeepers can well profit by seeing that each and everyone of the stands has honey for sale. Even our own state of California that figures her exports of honey by the hundreds of carloads, can consume many times what she now does by fully developing her own markets.

T. O. Andrews, who has served as inspector for Riverside County, for the past fourteen years, has retired. H. J. Warr of Riverside is the new inspector. He is a young man with plenty of energy and has a large apiary of his own. He was deputy inspector for several years and we feel will fulfill the duties of the office efficiently and to the satisfaction of the beekeepers of Riverside County.

Showers have fallen over the different parts of the state during the past month, in some sections amounting to several inches. In our immediate locality the precipitation has not been sufficient to amount to anything for the beekeepers.

Corona, Calif. L. L. Andrews.

* * *

In Northern California.

Bees stopped breeding during October and have settled down for the winter. Reports indicate that a goodly number of young were reared in September and October and also that in most localities the intake of fall honey was normal. On the whole we expect bees to winter well throughout our district.

The executive committee of the California State Beekeepers' Association has decided that the annual convention will be held in December. The exact date or the place have not as yet been announced. For October Secretary J. O. Howard, 2209 Harrison Boulevard, Oakland, reports good association progress. A few of the things accomplished are: (a) blocking four city ordinances against the keeping of bees, (b) mailing a periodic bulletin to its members, (c) issuing on an average of one broadcasted lecture by Dr. Geo. W. Phillips, per month, (d) selling twenty tons of its members' honey at figures ranging from ¼ to 1 cent more than the beekeeper was offered on the outside, (e) arranging with publishers so that members may receive the leading bee journals at reduced rates, and (f) keeping the secretary's office open during business hours, where all members are always welcome and where free ad-

vice, telephone and stationery may be had.

Here is a word of caution to all wax renderers. When cheese from the wax press, slumgum or wax refuse is dumped it should be placed a considerable distance from any inflammable material. It has been observed on two different occasions that such refuse has burst into flame of its own accord. The two instances that I have knowledge of were piles of slumgum that had stood for several months before igniting. Recently I had occasion to examine a pile of wax cheeses and found, at a depth of about eight to ten inches, a considerable amount of heat. We have all heard of the smoke nuisance caused by the smouldering of sawdust heaps about sawmills. If it is not feasible to use such refuse either as fuel or fertilizer, it would be an excellent plan to scatter it about over some waste land. Refuse from a modern wax press when the wax rendering has been properly done, will not act as a disseminator of American foul brood. M. C. Richter.

Big Sur, Calif.

* * *

In Wyoming—As I write we are assembling at Thermopolis for the fourth annual convention of the Wyoming Beekeepers' Association. For the most part, it will be an optimistic bunch. Although spotted, our honey crop has been good in most localities. The fall weather in Wyoming has been very favorable, and the bees have gone into the cellars or packing cases in a strong condition. Our only serious unfavorable condition for next season's crop has been the dry weather through the late summer and early fall, which has retarded the normal development of our young sweet clover.

The program for our convention is threefold: first, education; second, legislation, and third, marketing. For the educational program, Prof. R. L. Richmond, agriculturist of the Colorado Agricultural College, is the main speaker. Another welcome out-of-state speaker is A. H. Dunn of Council Bluffs, Iowa.

The Platte County Beekepers' Association, of which F. S. Harter, Wheatland, is president, has shipped three carloads of comb honey this season. Platte County is the only comb honey district in our state, it being produced only in small quantities elsewhere.

"Wyoming Honey" week is to be held November 16-22, in conjunction with the National Honey Week. Beekeepers will have honey displays in about half of our Wyoming stores during the week. Large window streamers will be plastered up in all our stores. A special honey bulletin has been published by our University Extension Service, which will be distributed wherever honey is sold. The luncheon clubs of the state will co-operate by having a honey luncheon served and by having beekeepers upon their speaking programs. The public school system is falling into line by making use of honey in cooking the main subject of study in all domestic science departments. A flood of publicity matter goes out to every issue of all our Wyoming papers for six weeks preceding the week. Our slogan for the week is, "Sweeten Wyoming People with Pure Wyoming Honey." The program is being arranged co-operatively between the Wyoming Beekeepers' Association and the Extension Service of the University of Wyoming.

The writer wishes to make a correction with reference to the information heretofore given relative to the reclassification of shipments of comb honey, which were secured through the efforts of the Wyoming Beekeepers Association. The first information coming to us relative to carlot shipments was misinterpreted, for the reclassification applies to less than carlot shipments only.

Laramie, Wyo. C. L. Corkins.

* * *

In Iowa.—With us, the year is over so far as the honey crop is concerned, and we will have to record it as only fair. What I said in September Gleanings as to the clover honey flow, applies equally well to the fall honey flow. Too much cold and wet weather spoiled one of the best prospects for a fall honey flow that we have ever seen. Summing it all up we harvested just 500 pounds more honey this year than last. In addition to this, the bees are in much better shape so far as stores are concerned, so it was not necessary to feed so heavily as last year. Many colonies required no feed, and those which did need feeding would take only about one 10-pound pail of syrup.

The fall, for the past month, has been all that could be desired in putting the bees in shape for winter. The weather has been very mild, with the bees flying almost every day, which made the job of feeding an easy one as the bees took the feed readily. If bees are not in good condition for winter this season it is the fault of the beekeeper who should have taken advantage of the ideal weather conditions.

Our average this season was 135 pounds per colony and the honey is of excellent quality. While, if weather conditions had been different, the yield might have been considerably higher, there is the satisfaction of knowing that

the bees are going into winter quarters in much better shape than last year, which offsets the shortage to a considerable extent. We all know that this condition is the best insurance for a crop another year. In fact, it is all the insurance we can give them that far ahead.

We have had a fine trade on honey thus far, and have the smallest stock on hand at this time that we have had for four years. The demand has been good ever since late summer which is somewhat unusual.

Every beekeeper should read the editorial by Editor Demuth on "Pushing Honey Locally," in the November Gleanings; read it several times, and then go and do likewise. If every beekeeper would "saturate his own locality with honey" and see that it is kept so, it would go a long way toward solving the marketing problem. The beekeeper who does this is devoting his time and energy to the building up of his own market and not that of any one else, which some seem to be so afraid of doing in subscribing to a national campaign of advertising.

In my opinion this is one of the very best ways to create a demand for honey, and just why the editor of the Western Honey Bee should criticise the method is not quite clear. National advertising will not look after your own locality in quite the same manner that you can look after it yourself. Besides nationwide advertising is probably a long way off. If it were here today it would require the united efforts of every beekeeper in the United States to put it over. Don't deceive yourself by thinking that national advertising is the whole thing. There is a follow-up program to all big advertising in the way of traveling salesman. This is out of the question with honey, and the beekeepers will have to assume this job themselves, so let us get busy. "Eventually, why not now?" Leslie Burr hits the nail on the head on page 697; read it. It is worth the price of Gleanings for the whole year.

In closing, I wish to say that I have always had to find my own market for honey ever since I have been a beekeeper, which has been over 20 years. I am of the opinion I shall always have to do so. This, however, has not been done through any one channel, but through several. When one fails to bring the desired results I change my plan of attack to meet the conditions as they exist at the time. In all this time I have never let the opportunity slip of selling every pound locally that I could.

W. S. Pangburn.

Center Junction, Ia.

In Montana—Reports coming into this office from practically all the large producing centers indicate that the honey crop this year is not as large as that of last year. This year approximately 1,750,000 pounds of honey were produced in the entire state, while last year the production ran slightly over 2,000,000 pounds. This shortage in crop may possibly be attributed to two factors—the western part of the state experienced exceedingly dry weather and along with this there seems to have been a lack of irrigation water. The eastern part and the northern part of the state on the other hand, experienced considerably cool and cloudy weather with more than a normal amount of moisture.

In spite of the fact that the honey crop throughout the country is somewhat below normal, the demand for car shipments was not as brisk earlier in the season as might have been expected. At this time of writing, however, sales are picking up. Indications are that prices on honey have not advanced over last year, wholesalers claiming that contracts were made at last year's prices earlier in the season when prospects for a good crop were at their best. A number of our large producers are holding a portion of their crop for 9½ to 10 cents in car lots.

Not a year passes but what we read of complaints made by large buyers of honey, that faulty shipments have been received. We also read how to overcome or prevent such shipments. It is true that most of the complaints made are justified, but the entire blame should not fall on the producer. The present prices of honey and the high price of good shipping cases do not warrant the use of the very best cases. This past year most of the commercial producers in this state used the double export case, yet we find that they are not offered a fraction of a penny more for their honey put up in such cases nor have they received any preference over those who do not use such a substantial case. A number of producers have asked, "Why put the extra money into better cases when buyers pay little attention to them?"

In my opinion this is a point worth considering by large buyers if they expect to receive shipments of honey in good condition.

The annual meeting of the Montana state beekeepers' association is to be held in Billings at the Y. M. C. A., December 19 and 20. This will be largely a business meeting as plans are being made to approach the legislature for an appropriation in order that the work here in the state may be continued and

expanded. American foul brood is rapidly spreading and unless our law is enforced and a clean-up campaign started, beekeeping will be a losing game.

Bozeman, Mont. O. A. Sippel.

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In Manitoba.—In these news letters it seems to be the fashionable thing to give all the latest gossip regarding the alcohol-formalin method of treating American foul brood, and I feel that, although a little late, I do not want to be out of it altogether.

Last spring we had two beekeepers who were anxious to try it out. One had an apiary of 140 colonies with about one-half of the colonies diseased. He found the disease in the fall of 1923 and treated his super combs during the winter. As soon as possible in the spring, he treated by shaking the bees into an empty hive on bare slats for four days and then on the treated combs. He did not establish a hospital yard. The other apiary, consisting of 38 colonies and 700 super combs, was found diseased on May 28. The dipping tank and solution were purchased at once and the super combs dipped as fast as possible. As soon as the combs were ready, the apiary was moved to its summer location and treated. A hospital yard was then established five miles away to which all the diseased combs of brood were taken and where they remained until all the brood had emerged, when these colonies were again shaken and moved to the treated yard.

On July 31 I inspected the first yard and found ten colonies with a diseased cell here and there. One colony showed about twenty cells altogether and the others only one or two each, but this was too much and I came away, feeling that the treatment had been an expensive experiment for this man, and nothing had been gained.

The other yard was inspected on Sept. 10, and not a single cell of disease could I find. The brood had nearly all emerged leaving empty combs very easy to inspect. I went very thoroughly over each comb, but could do nothing else than give a clean bill of health.

From the first I was impressed with the careful manner in which the last mentioned man carried out instructions, while in the other case I noticed evidences of carelessness. A cell of granulated honey was noticed once in a while in the treated combs and when I showed them to him he said, "Oh, that does not matter! That stuff would kill anything," and jokingly stated that it had nearly killed him.

Judging from these experiences, I believe that in the hands of a careful operator this treatment will do all that is claimed for it, but it will in no way make up for any carelessness.

Each of these men stated that they had shed many tears of bitter sorrow since they began work with the solution and in the future would prefer rather to lose a few hundred dollars than endanger their health by breathing the fumes from the dipping tank. [Much of this discomfort can be avoided by ventilation and proper handling of the combs. It does not endanger the health because the operator would be driven away long before there could be any injurious effects from the fumes.—Editor.]

At the present date we are having a spell of wonderfully fine weather. Fields are still green and late crops of sweet clover are still yielding nectar in a number of localities.

On October 25 I assisted in preparing a small apiary for winter and when removing super combs I found a super on each hive nearly filled with new honey so green that it splashed over the ground when we shook off the bees. The thermometer reached 74° on that date and the bees were coming and going as in midsummer.

Honey is selling rapidly and prices advancing. Winnipeg dealers are nearly all featuring local honey and the imported product is so far conspicuous by its absence. L. T. Floyd.

Winnipeg, Canada.

* * *

In Texas.—The weather during September and October has been almost ideal. In many sections of the state the bees have been able to store quite a little fall surplus. In the cotton section the flow ended the 20th, when cold rains and a temperature very little above freezing occurred in most of that section. This date marks the end of any surplus honey flow for this year. The average honey production of the state will be normal. Few if any districts of the state are below normal. The two great honey producers this year were horsemint and cotton. In a few places mesquite helped in the general yield. The fall rains and honey flows caused the bees to build up and they are going into winter quarters in fine shape. The honey plants are in as good a shape as they have been for years. The temperature reached 44 degrees and in some parts of the state it was even a little lower on the 24th of October and the bees clustered. This is the earliest date for winter cluster of which we have record.

Bulletin No. 255, "Beekeeping for Beginners," has been re-issued by the State Experiment Station and is available for distribution. This bulletin was first dis-

tributed in 1920 and was very popular with the beekeepers. There have been so many requests for it that the station felt that it should supply this demand and now the bulletin is ready. This paper is designed to give to those just beginning beekeeping or who wish a knowledge of how to commence beekeeping, the desired information. While it is doubtful if this bulletin would be of great interest to many of the readers of this paper, it would repay every beekeeper to have a copy to loan to the beginners who apply to him for aid. The beekeepers of the state of Texas are requested to send the names and addresses of those desiring such a publication directly to the director of the State Experiment Station, College Station, Texas.

The honey flows for this year have been about normal for each of the species of honey plants blooming. The huajillo bloomed at its regular time and gave about its usual yield. According to all of the supposed conditions mesquite should have given us a good bloom. It did not, however, bloom in sufficient quantities to be one of the principal yielders. Horsemint did everything that could be expected of it. Cotton gave a prolonged but a light flow, throughout the late summer and fall. In the portions of the state where cotton is grown, outside of the black land district, light flows are reported during September and October. In some places as much as a 20-pound surplus was made. White brush, the plant over which more dispute occurs than any other in Texas, bloomed twice during the season. The average length of blooming was five days. The amount of surplus stored from the first blooming was 2½ pounds, from the second bloom, four pounds. Broomweed made the most abundant bloom in years. In the southwest section no honey flow is reported but the north central section reports a good flow.

The beekeepers of the United States should be very much interested in Farmers Bulletin No. 1372, which has just been issued by the United States Department of Agriculture. This bulletin emphasizes the value of bees in the cross-pollination of plums and gives some very interesting figures on the value of bees to the plum growers of California.

T. W. Burleson of Waxahachie, Texas, had the misfortune to lose his packing plant, a large amount of bee fixtures and the majority of his honey crop by fire. This occurred about October 1. The loss is quite large, as Mr. Burleson possessed one of the best equipped private packing plants in the state. H. B. Parks.

San Antonio, Texas.

In Michigan—All brood-rearing was checked earlier this season than usual, due probably to the extraordinary cold weather during the month of September. Strangely enough, Michigan has been having September weather in October but in most cases fall sources were so far past that the bees collected little or nothing for fall stores. As a result, feeding is being practiced generally.

On account of the crop being not more than 60 per cent of normal and due to the fact that comparatively little honey was carried over from last season, the honey market is in a very healthy condition. Comb honey is practically taken up and beekeepers report more inquiries for extracted honey than for a long time previously, yet occasional instances are reported of honey retailing at near carlot prices. This, in spite of the best efforts of the association to inform all beekeepers what a fair price for honey is.

In accordance with Michigan's law, permitting county supervisors to appropriate funds for apiary inspection within the county, B. F. Kindig, Director of Apiary Inspection, reports that due to the activity of the county beekeepers' associations in placing requests for assistance, boards of supervisors in the various counties have appropriated sums which will total close to $5000 for disease eradication. According to the law, these funds will be administered through the jurisdiction of the Department of Agriculture. This assistance will have much to do with the speeding up of disease eradication in Michigan, and is made possible only through the co-operative efforts of county beekeepers' associations.

Judging from the inquiries received, many Michigan beekeepers will use honey-solution in their own radiators and in many cases will manufacture it for sale this winter. Inquiries are also being received from coal concerns and taxi operators who express interest in the permanent features of honey solution as an anti-freeze. One Detroit coal concern used honey solution in its fleet of Ford trucks last winter with satisfaction and will use it again this winter. They state that they do not find the honey solution is more expensive than alcohol and that it is more desirable on account of its other properties. They are installing water pumps in their trucks this winter to improve the circulation of the honey solution.

Numerous inquiries are also being received for directions for packing bees in tar-paper cases. Apparently this form of winter protection is superseding many of the two and four-colony packing cases.

A beekeepers' short course will be held at the Michigan Agricultural College, February 9-21. Arrangements have been made whereby Professor F. B. Paddock, State Apiarist of Iowa, will assist in the lecturing at M. A. C., while the writer assists with the Iowa short course. It is also possible that Mr. Hambleton of the U. S. Bureau of Entomology will be present.

Edwin Ewell, Extension Specialist in beekeeping, has recently been holding a series of meetings in the upper peninsula. With the co-operation of the county agricultural agents in the counties best adapted to beekeeping, a fine interest has been stimulated. This, together with the moving in of large apiaries by commercial beekeepers from the south and from lower Michigan, has resulted in a total of nearly 2000 colonies for one county alone. In spite of the cold season a satisfactory crop was taken. The Stover apiaries were shipped in from Mississippi and the managers were sufficiently satisfied to plan on returning next year. R. H. Kelty.

East Lansing, Mich.

* * *

In Indiana.—In this locality very little fall honey was secured this year. Cold, rainy weather throughout the latter part of August and in September, prevented most colonies from gathering a surplus. Many of them must be fed if they are to survive the winter, although a few apiaries in favorable locations were able to secure some surplus.

In 1923 our crop consisted of dark and amber honey, practically none grading white. This year it is about all white, there being little amber or dark. To place on the market a uniform product from year to year seems next to impossible. To do so it would be necessary to obtain honey from a distance.

Bakers are now using large quantities of the cheaper grades of honey in bread making. We have sold several tons to be used for this purpose, mostly in lots of a few 60-lb. cans at a time, their delivery trucks picking it up at the door.

Honey in this locality is about all sold locally or to nearby cities, mostly to retail grocers and, through advertising, sales are increasing. It sometimes happens that some beekeeper from outside the county or some fellow who has bought up a truckload of honey at a low price, will take advantage of the demand created by local advertising and fill up the grocery stores at cut prices. Marketing is the most important phase of the beekeeper's work and until we are willing to co-operate in demanding a reasonable price for our product, we must expect to operate on a non-profit basis.

The small beekeeper is not our most difficult problem for most of them do not produce any honey worth mentioning. It is the fellow with 50 colonies or more who knows enough to get a crop but hasn't sense enough to market it at a fair price. If you try to buy his whole crop he wants retail prices, and if you don't buy it he will retail it in your town at wholesale prices. These individuals never attend a bee meeting and many of them do not read a bee journal. Of course, they "all know all about bees and beekeeping." It would seem that the only solution of this problem is for enlightened beemen in every locality to do some missionary work.

Clover is abundant here but whether or not it will yield a crop next year remains to be seen. Much will depend on the snow and rainfall between now and next June.

In using the Hutzelman solution it is easy to overlook one or more cells of capped honey and the disease may then reappear. We have used the solution for sterilizing about 2000 combs and it seems to be effective. E. S. Miller.

Valparaiso, Ind.

* * *

In Western New York.—We had our first snow flurry today (Nov. 2). October was a warm, beautiful month, while September was cool. Goldenrod and aster yielded well whenever the weather was warm enough. Our scale colony, a two-story 10-frame hive, is still on the scales. Today it weighs 108 pounds, the same as it did on September 2. The weight climbed to 120 pounds early in October, and the bees have boarded themselves during the past two months, which we consider very good.

Honey is selling well. We have sold more at retail and in small wholesale lots than ever before, except during war time. This increased demand, we believe, is at least partly creditable to the work that has been and is still being done to popularize honey. Some of our customers have mentioned having heard talks about honey over the radio.

This work on the part of our association, the American Honey Producers' League, and the bee specialists of the colleges, is highly commendable from the standpoint of the honey producer and is the sound, sensible way of building up the industry.

At least two of our western New York beekeepers are planning to spend the coming winter in the sunny south. F. R. Tompkins of Niagara Falls and John N. DeMuth of Pembroke are the migrators. I understand both intend buying bees in

the South to ship north next spring. We surely wish them good luck and a good time.

The greater part of the fruit crop has been sold at good prices and has been shipped. Many of the local storage plants that have been doing a thriving business for years, have barely enough business this year to pay their expenses and a few have closed their doors for lack of business. All farm products, except potatoes, are selling here at higher prices than a year ago and it would seem, with the improved demand for honey, that wholesale prices should advance at least a cent or two over last year's prices. H. M. Myers.

Ransomeville, N. Y.

* * *

In Ontario.—Since writing for the November issue, much of Ontario, including all places where we have apiaries, has been almost entirely without rainfall. Six weeks' drouth earlier in the season would have been disastrous in many ways, but coming so late and after much wet weather, it is doubtful if any serious damage has been done. Clover had attained good growth because of very favorable weather earlier in the season and as a consequence it is well rooted. The weather has been ideal for preparing bees for winter, and anyone who is behind with this work has something aside from weather to blame. My bees are all fed and packed for winter and my two sons are away on their annual deer hunt. Later on we will have the usual amount of work, such as rendering wax, etc., but generally speaking we have comparatively little to do between now and spring. While I do not like work any better than the average man (as I get older I seem to care even less for it than formerly) yet I must confess that I enjoy the busy season of the year best, and feel much better when I am hustling around every day even if I am not always doing hard work.

Honey continues to move out at a normal rate, although our usual trade in the west among farmers is not as good as it has been some other years. Perhaps the very late season in western Canada is delaying orders, but as we have little honey left on hand, orders are not now troubling us much for this year.

In driving through the country I have noticed that beekeepers are using natural shelter for their bees more and more every year. By "natural shelter" I mean especially, groves of second growth timber instead of board fences and other manufactured shelters. While board fences of any description are better than nothing, in some cases, and but little if any better in other cases, they in no way equal a nice stand of second growth timber when such a location is available. There are a lot of things I do not know about beekeeping, a lot more that I am not sure about, but this statement as to the relative value of winter shelter is one of the few things about which I feel almost certain.

Soon after this article appears, the annual convention of the Ontario beekeepers' Association will have been held in Toronto. While the honey crop has been light and as a consequence a lower attendance might be expected than in bumper years, yet there will surely be a large crowd there, as this convention is always well attended. Just why this is the case I do not know but it is a fact, as all will attest who have attended these meetings. While the programs are to a large extent, educational as they should be, yet I think that the great bulk of the visitors are attracted to the meetings as much for social reasons as for any other. The busy season is over, and many count on the convention as a holiday that can be profitably spent, viewing the matter from many angles.

Winter entrances may be made as small as the Editor mentions on the first editorial page of November Gleanings, provided the apiarist can keep in touch with the colonies during the winter season and know just how things are going. Wintering hundreds of colonies as we do without seeing them from November 1 until the following April, we do not risk very small entrances any more, no matter how well the bees are packed. We actually find little difference in results when entrances are fairly generous instead of so very small. Farther south or farther north might make a difference in results. As it is, especially when heavy snows have covered the hives, an entrance quite large would please me better than a very small one. The size of the winter entrances is a question that must be decided by each beekeeper, after taking into consideration the various items that confront him in his locality. Even when that is done we may expect to find different people in the same locality differing quite widely in their practice, yet each of them succeeding very well. J. L. Byer.

Markham, Ontario.

[In localities where the hives are covered by deep snow during the coldest portion of the winter, conditions so far as the entrance is concerned, are somewhat similar to the conditions prevailing in the cellar, inasmuch as the snow shuts off the wind. Neither is bottom packing as important a factor where there is plenty of snow as it is where cold winds sweep under the packing case.—Editor.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

A Sweet Clover Story. There is an increase in the acreage which is being devoted to sweet clover in Kansas. I have a pretty little story on sweet clover which I think may interest you: Mr. G. F. Wagner, R. F. D. No. 4, Manhattan, Kansas, has a farm, a large part of which could not be used for crops, consequently he purchased some bees and found there were no honey plants within his locality upon which the bees would feed. He then sowed five acres of otherwise useless ground to sweet clover. The following year his bees began storing honey the day the sweet clover bloomed and stopped the day it ended, and stored 2000 pounds of honey which he sold for $400.00, or an average of $80.00 an acre for honey from sweet clover. In addition to this he harvested the seed and received a good price for that. During the past year he increased his acreage of sweet clover and harvested 8000 pounds of honey, and I do not know how much seed he will get. That is as nice a sweet clover story as I know of, and the best of it is, I believe it is a "true story."

Manhattan, Kans. J. H. Merrill.

A New Winter Case. I am sending illustrations of my latest winter case which can be made suitable for any size of hive, either with or without a food-chamber. It can also be built to fit conditions in different localities. The case is easily applied simply by hanging the four pieces on the sides of the hives. They are just as easily removed. The side pieces may be omitted, if desired, in which case two or three combs should be removed and packing placed inside the hive. This is especially important with Jumbo hives. The regular summer covers are used for winter. They project over the top of the winter case to shed water and a tin trough (one end of which is shown in Figs. 2 and 3) sheds any water that goes between the two covers. A piece of folded tin at each corner of the case (not shown in the illustration) prevents water from going down between the sides and the ends of the winter case.

St. Louis, Mo. J. H. Fisbeck.

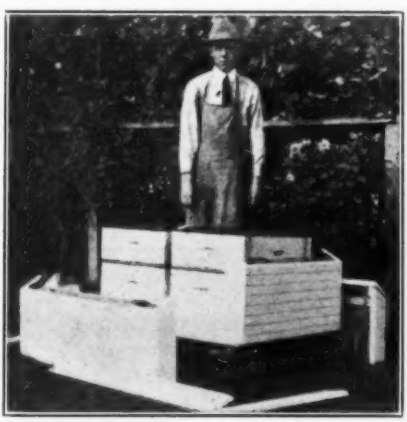


Fig. 1.—The sides and ends of this winter case are built to contain the packing permanently. The inner wall or cushion of the side and end-pieces fits snugly against the exposed sides and ends of the hives. The four pieces which form the case are hung in place by means of hooks of strap iron or wire which catch over the edge of the empty super.

Fig. 2.—The lower corners of the case are held tightly together by means of pieces of wire looped over screw heads. The regular hive covers are then put in place.

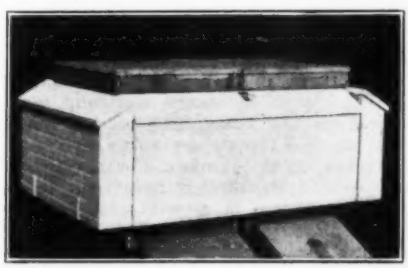


Fig. 3.—Packing completed. The end of the tin trough which prevents water from going down between the covers can be seen projecting beyond the covers.

This apiary, on a main highway near Chicago, attracts the attention of motorists, who stop to buy honey.

Attractive Apiary Helps Sell Honey. I am sending a picture of my little apiary. The skep and the two Buckeye hives which were illustrated on page 727, November issue, face the Grant highway and are close to the road. The bee yard proper, shown above, is located directly back of the skep. Along the fence I planted giant sun flowers, which act as a windbreak as well as a decoration to the yard, and between each row of hives I planted castor oil beans. When the latter were grown I trimmed out the lower leaves to give a sort of palm garden effect. The arrangement is attracting a great deal of attention. We have so many calls for honey that we are obliged to purchase additional honey in order to supply the demand.

Chicago, Ill. M. G. Eldred.

Wisdom of the Honeybee. How "wise" are bees? We have seen ancient writings ascribing much wisdom to the honey-makers, but sometimes we find them showing as much lack of wisdom as do humans. For instance, I have seen it stated that bees will not establish a home, in a wild state, where there is danger of a flood. This year I saw a strong colony that had set up housekeeping in a big sycamore tree alongside a cove of the river here. Two weeks later we had a big freshet. After it receded I went to the cove and saw the flood-mark on that tree two feet above the entrance to the colony's home. As the tree was solid above, with no exit but the one I saw them using before the flood, and as the water remained at that altitude for 48 hours, no bees were to be seen emerging from the entrance. That colony, at least, did not know how high the water was going to be, so it perished. George Gilbert.

Port Dickinson, N. Y.

Fine Spirit of Beekeepers. Since I have become interested in beekeeping and have been reading Gleanings, I must confess that the beekeeper is the most unselfish person that I know. Just as soon as one discovers any thing new he is eager to tell his fellow beekeepers about it. I wonder if at least a portion of the credit for this spirit among beekeepers must not be given to the pioneer beekeepers whose influence is still going out among men.

Columbiana, O. Elmer Lehman.

Pleased with House Apiaries. My new house apiaries are fine, especially when taking off honey. I remove the shutters from the windows and replace them with wire screen, then remove the bridge between the hive and the wall. I can then shake and brush the

An apiary in clover in Wisconsin. Apiary of George Jacobson, Kankanna, Wis., during the honey flow. The stepladder in the foreground is one of the necessary tools for apiary work.

combs to my heart's content without a veil and with very little smoke. There is no trouble from stings and no robbing. I can work with the bees in these houses, rain or shine. I expect to have about 80 colonies this year in these houses. With a waving mass of fireweed all around them as far as one can see, if I do not succeed in securing some record yields in these houses—well, it will just be another disappointment. Chas. Moore.

Mission City, B. C.

Shipping Honey by Parcel Post. In preparing five-pound pails of honey to be sent by parcel post, I place four drops of solder around the cover after it has been pressed down firmly. This solder will easily break when the cover is pried up with a screw-driver or other strong tool. I then remove the handle and wrap paper around the pail, and glue and tie it with string. I replace the handle after the pail is wrapped by forcing the ends through the paper. Very little acid is necessary to make the solder stick.

Hugo, Minn. A. H. Schmidt.

Too Much for Granted. I am glad that Friend Crane has drawn my attention to some errors in my description of the Celotex winter case. I certainly did take much for granted. I assumed that everybody knew what matched fencing was, and I learn with surprise that the advertising campaign of the Celotex Company has not yet penetrated into every part of the country. Matched fencing is one of our most common forms of prepared lumber, and I understand the name is the one adopted by the National Lumbermen's Association. It can be bought in every village, and the winter cases illustrated on page 729, November Gleanings, are made from it.

No one realizes more than I do, how indefinite the article is. It was foolish of me to rush into print prematurely. I can only blame it to youthful enthusiasm. When I look at the pictures on page 729 it makes me ashamed of American bee-keeping. What labor and expense in handling heavy cases and loose packing! And so I have studied the question for years, trying to evolve some simple and quick way of insulating. As I see it, we have either discovered a gold mine or a mud hole. This winter we are giving Celotex a real test, wintering sixty hives in cases made from it, every hive having a shallow food chamber filled solid with early-gathered honey. Next spring the results, good or bad, will be published, and if a success, the directions for making will be so definite that no confusion will exist. Joseph M. Barr.

West Allis, Wis.

Black Bees Dispose of Drones. In view of a statement by Dora Stuart, in September Gleanings, to the effect that drones for the mating of early reared spring queens can be carried over the winter by the simple device of making the drone rearing colony queenless, I give the following experience:

On September 2 three populous colonies of black bees were dequeened for the double purpose of Italianizing and rearing queens. All of these colonies had drones, one of them having a considerable number. A week later drone traps were placed on all colonies from which drones were not desired. Now according to the "trade secret" of Elmer Edson, as given by Dora Stuart, those queenless colonies should still have their drones. The facts were to the contrary, for every drone had disappeared.

All the black colonies, of which there were several, had disposed of their drones. But this was not true of the Italians. In fact, today, October 16,

Bees packed in tar paper winter cases in northern Indiana. One of the apiaries of H. J. Link, Ind.

there are still plenty of Italian drones in the populous Italian colonies, even though they are queenright, and there has been no honey flow for the past three weeks.

My experience has been that the best drone insurance is a populous colony and a super with 35 or 40 pounds of honey on the hive. Leslie Burr.

Willits, Calif.

Bouquet for Dr. Phillips. I can never forget the first time Dr. Phillips came to Madison. I expected to find a cobwebby scientist who would talk learnedly and loftily, but found instead a genial soul, simple in speech and manner, and speaking a language that we could all understand. Year after year he has sent us back to our work with fresh enthusiasm, inspiring us to become better beekeepers, encouraging us to read in "Nature's Infinite Book of Secrecy" and learn a little more so that today his name is a household one among us, respected and loved.

In Ian McLaren's book, "Beside the Bonnie Brier Bush," you will remember that at the funeral of the scholar, Drumsheugh addressing the bereaved mother, expressed the sentiment of the village when he said, "Margaret, there's only wan hert in Drumtochty the day, and it's sad."

And no more fitting thing could be said of Dr. Phillips by Wisconsin beekeepers. Though we regret that he has left the U. S. Department of Agriculture, there is only one heart among us, and that united heart is glad that he goes to new opportunity and service. Ruskin has wisely said, "There is no wealth but life," so we all wish the Doctor wealth in great abundance.

West Allis, Wis. Joseph M. Barr.

Mild Winters in Vancouver. In 1920 the lowest temperature recorded in Vancouver was 17.3°. This region enjoys (?) in the neighborhood of sixty inches of rain annually, mostly in the winter season. In my own experience at Cloverdale (Fraser Valley, twenty-five miles from Vancouver) the bees flew on the following dates in winter: 1919: Nov. 25, Dec. 5, 18, 19, 20, 24; 1920: Jan. 13, 24, 26; Feb. 2, 4, 7, 21, 28; March 7, 17. The following winter Oct. 24, Nov. 3, 4, 5, 14, 15; Dec. 4, 10, 28; 1921: Jan. 10, 22. After this date something occurred that prevented me from further keeping records. Feb. 7 to March 7, 1920, was a dry month, no snow, no rain falling. Feb. 28 bees gathered pollen in abundance from willows. March 7 young bees were noticed emerging. Nov. 5, 1920, bees gathered pollen. It can be seen that bees have ample opportunity for cleansing flights during winter. I have not known a winter in this section of British Columbia when the bees could not get out at least once a month. The Lower Fraser Valley, Vancouver, including North Vancouver, and the lower end of Vancouver Island all experience mild winters, very little snow falling as a rule. In Vancouver the total snowfall all year (1920) amounted to 5.85 inches, while, as stated before, the lowest temperature recorded was 17.3 above zero.

The warm Japan current has a tempering effect on the weather of the Fraser Valley, the lower mainland and southern Vancouver Island.

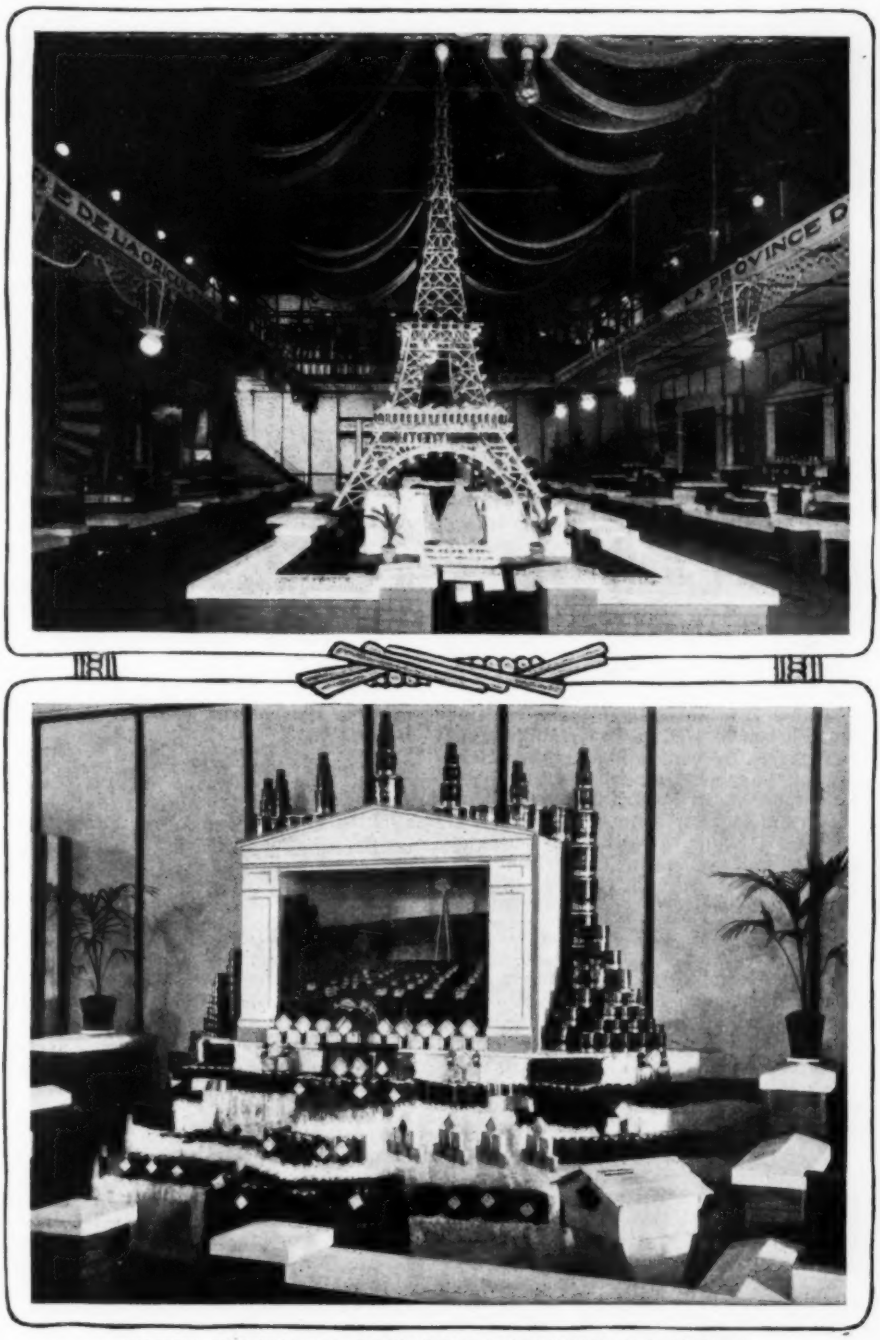
Vancouver, B. C. Bevan L. Hugh.

Tornado Victim Receives Aid. In August Gleanings you published an appeal for me which was sent to you by Dr. Luft of Fremont, Ohio. I wish to thank you, also the readers of Gleanings, for the generous help given me. I have received 11 queens, 135 pounds of honey and $114.00 in money. I have sent every one who has given me help a small picture of the remains of our home after the tornado, but some unfortunately did not give their address so I was unable to thank them. Will you thank them for me through Gleanings?

Castalia, Ohio. Ed Mitchell.

Compact Winter Stores. A colony of bees, medium in strength, will winter far better on seven or eight combs well filled with stores, than with the same amount of stores in ten or twelve combs. The more scattering the stores, the less the chances for good wintering and with more space in the hive to keep warm. During long spells of very cold weather bees can not move very far for food, and they frequently starve with an abundance in the hive but out of reach. Even a strong colony should have its combs well filled as late in the season as it is practical to feed. Bees will undergo a far longer period of confinement without a cleansing flight if their food is sugar syrup. With such stores bees will go through several months of extreme cold without the least evidence of dysentery. The combs remain dry and there are only a few scattering dead bees that would naturally accumulate in any normal colony during a similar length of time without a flight.

East Avon, N. Y. A. C. Gilbert.



HONEY EXHIBIT AT PROVINCIAL EXHIBITION OF QUEBEC.

Upper: A miniature reproduction of the Eiffel tower, the famous tower of Paris. It is 29 feet high and contains 900 jars of honey. Different colored electric lights add to the beauty of the structure.

Lower: Comb honey and extracted honey tastily displayed. Samples of honey from 2845 Canadian beekeepers were displayed at this exposition. The painting in the background is of a Belgian apiary. It was made by Leon Tombu of Belgium, who is not only a beekeeper of renown but also an artist.

JUST NEWS
Editors

The twenty-fourth annual report of the Ontario Beekeepers' Association contains many papers of unusual value. It is an 80-page pamphlet and contains 75 pages of solid reading matter.

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"Beekeeping in Wisconsin" is the title of Circular 174, published by the Extension Service of the University of Wisconsin. This bulletin was written by Jas. I. Hambleton, who recently succeeded Dr. Phillips as apiculturist of the U. S. Department of Agriculture. Mr. Hambleton prepared this bulletin while he was an assistant in the Department of Economic Entomology of the Wisconsin College of Agriculture.

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The Iowa Beekeepers' Association will hold its annual meeting at Des Moines on December 17 and 18 instead of December 16 and 17 as announced last month.

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The schedule committee of the American Honey Producers' League announces beekeepers' meetings for December and January, as follows: Ontario, at Toronto, December 2, 3 and 4; Wisconsin, at Madison, December 4 and 5; Illinois, at Springfield, December 9 and 10; Michigan, at Lansing, December 10 and 11; Minnesota, at St. Paul, December 15 and 16; Iowa, at Des Moines, December 17 and 18; Montana, at Billings, December 19 and 20; Maryland, at Cambridge, January 8; New Jersey, at Trenton, January 15 and 16; Pennsylvania, at Harrisburg, January 20-23.

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Jas. I. Hambleton, Apiculturist, Bureau of Entomology, Washington, D. C., has prepared a circular containing a list of regular and occasional news letters and circulars published by some of the beekeepers' association and agricultural colleges. This list can no doubt be secured by writing to Mr. Hambleton.

* * *

The Cornell Apis Club has been organized for the coming year. R. L. Parker of the Iowa Agricultural Experiment Station at Ames, Iowa, now on leave of absence for graduate work, is chairman. A series of talks by various members of the club have been arranged for the first half of the year, these being on the life and work of the following prominent apiculturists: Francois Huber, L. L. Langsroth, Moses Quinby, Charles Dadant, Dr. C. C. Miller, A. I. Root and Isaac Hopkins.

There will be a beekeepers' meeting at the Worcester County Beekeepers' Society—the Federated Massachusetts Association and the Massachusetts Department of Agriculture co-operating—on January 6, 1925, in Worcester, Mass. These meetings bring together all the agricultural interests of this state for four days beginning January 6. There will be meetings, demonstrations and extensive exhibitions. The program for the beekeepers' meeting, as well as other information, may be had by addressing Dr. Burton N. Gates, 136 State House, Boston. Anyone interested in beekeeping is invited to attend.

* * *

A short course for beekeepers will be given by the New York State College of Agriculture at Cornell University, Ithaca, New York, during the week of January 26, 1925. Dr. E. F. Phillips and R. B. Willson are making elaborate preparations for this short course, which is expected to be one of the best meetings of this kind yet held. The completed program will be ready for distribution some time in December and may be had by writing to Dr. Phillips at Cornell University, Ithaca, N. Y.

* * *

The winter meeting of the Indiana State Beekeepers' Association will be held in the statehouse at Indianapolis, on December 18 and 19. Several speakers of nation-wide reputation have been secured for this meeting.

* * *

Miss Florence Naile, secretary of the Ohio State Beekeepers' Association, who was a delegate to the Seventh International Apicultural Congress at Quebec, has written a delightful account of side lights at the Congress, which has been sent out in a beekeepers' letter to members of the state association.

* * *

Ph. J. Baldensperger, of Nice, France, editor of the "Bulletin de la Societé d'Apiculture des Alpes-Maritimes," who was the delegate from France to the Seventh International Apicultural Congress, has been studying beekeeping conditions in the United States since the meeting at Quebec in September. He spent some time at Cornell University, Ithaca, N. Y., and at Washington, D. C., then came to Medina, where he has spent several weeks. Mr. Baldensperger was born in Palestine and his beekeeping experience covers practically all of the Mediterranean countries.

BEES, MEN AND THINGS
(You may find it here)

"I think that a day in spring, or any time, with the bees is a joyous day. What can bring a soul into greater harmony with one's Creator than such a day? May the Tribe of Bee Lovers increase—also Honey Eaters."—Mrs. C. A. Young, Greene County, Mo.

"Last spring I put 42 colonies on the summer stands. Two were light but the rest were strong. In the fall I had 71 rousing big colonies from which I took 198 cases of 24 sections each, besides about 150 pounds of chunk honey. I had this all sold and delivered by October 10. It brought me $893 after paying all freight and cartage. I have not taken into consideration the 50 or 60 sections that we have consumed and expect to consume ourselves."—M. R. Thompson, Roseau County, Minn.

"In judging honey at our recent fair, I found a sample of extracted raspberry honey which I think was as delicious as any one could desire. Raspberry bloomed during very dry weather. This gave us a thick heavy bodied honey of that delicate raspberry flavor. Goldenrod has given us a very fair honey flow which is unusual as far north as this. It helped a lot to keep up brood-rearing and for winter stores."—O. B. Griffin, Aroostook County, Maine.

"I have been an active beekeeper for over 50 years, but at 74 I am retiring. I have taken Gleanings I think every year since it was first published."—Mrs. S. H. Stockman, Androscoggin County, Me.

"Last spring when there was no demand for honey, I inserted an advertisement in a local newspaper advertising honey at standard retail prices. The result was surprising. I delivered the honey direct to the consumers. I was sold out within a few days, then purchased honey from others to supply the demand."—Leslie S. Bell, Hillsdale County, Mich.

"I found a 50 per cent solution of honey and water was too slow to circulate in zero weather, thus causing the motor to heat. I added two quarts of alcohol and had no further trouble. The honey solution seemed to prevent the alcohol from evaporating, as I added only water after that."—A. H. Schmidt, Washington County, Minn.

"Today is October 14 and it is springtime in New Zealand. The apple trees are now in bloom and the bees are busy gathering nectar from these blossoms in favorable weather. The weather has been very unsettled this last fortnight. We usually get a light honey flow about the middle of October from dandelion bloom and other spring flowers. White clover is now coming on nicely."—John Unsworth, Rotoma County, New Zealand.

"Beekeepers in this part of Australia are experiencing a very cold and wet spring. As a result bees are not in as good condition as they were in the winter. Quite a number of colonies are suffering from bee paralysis. I trust that you are having better times in your country."—Chas. Robertson, Victoria, Australia.

"Sweet clover is still in bloom (November 3) in this locality and the bees are busy gathering the finest quality of honey."—Rev. G. William Hickman, Brown County, S. D.

"The Saskatchewan Beekeepers' Association is only a year old. Prospects here are good. The number of beekeepers have increased from 23 in 1922 to 600 in 1924."—S. Merkley, Saskatchewan.

"The members of the El Paso County Beekeepers' Association own in the neighborhood of 11,000 colonies of bees. The average production of these colonies is 50 pounds of extracted honey per colony."—August Wolf, El Paso County, Texas.

"In this locality bees gathered chiefly from horsemint and cotton. Mesquite bloomed well but the bees worked very sparingly on it and preferred the cotton. They were working on the cotton in full swing when the mesquite started. This might account for the bees staying with the cotton."—J. A. Gehrels, Guadalupe County, Texas.

"It is not always good business to sell a large package of honey to a small user. One or two of my customers who had frequently bought small quantities decided later to buy in larger quantities on account of the relatively lesser price, and that was the last I have heard of them. When they bought the small package it was used in a short time and relished. When they bought the large lots they had so much that they must have gotten an overdose and do not buy any more. They say that they have some left. It is in a large can and perhaps granulated. They do not take the trouble to heat it and do not buy because they already have honey. I believe small packages at a reasonable price will very much increase the demand for honey."—Frank Hill, Nemaha County, Kansas.

GLEANED BY ASKING

Geo. S. Demuth

Cream Separator Disturbs Bees.

Question.—My bee cellar is directly under the cream separator. The separator makes considerable noise every morning and evening and the bees in the cellar are uneasy. Is this because of the noise from the separator?

South Dakota. Mrs. O. H. Strand.

Answer.—If the vibrations from the cream separator are transmitted through the building to the floor of the cellar or the rack upon which the hives are located, no doubt the bees are disturbed and therefore greatly injured by these vibrations. It is doubtful if the noise itself, that is, the vibrations of the atmosphere, would disturb the bees to any extent. If you find that the vibrations are being transmitted to the hives through the material of the building you can overcome this trouble by placing cushions under the hives to absorb these vibrations. There are other factors which will cause bees to become uneasy in the cellar, such as too low or too high temperature, discomfort brought about by the retention of feces, resulting from the consumption of honey containing considerable indigestible matter, and old worn-out bees.

Rust on Honey Containers.

Question.—If honey is carried over winter, will the tin containers rust if stored in a warm, dry room? A. G. Rockwell.

South Dakota.

Answer.—No. There should be no trouble from rust if the temperature remains nearly constant and the atmosphere is fairly dry. The usual cause of rust on cans containing honey is variations in temperature. When a can of honey becomes cold and the temperature of the surrounding air rises considerably, the cold can causes moisture to condense on it, just as a vessel containing cold water becomes covered with moisture on the outside in the summer. Moisture does not condense on empty cans because the temperature of the can follows closely the changes in the temperature of the surrounding atmosphere, while a can filled with honey warms up so slowly after a cold spell that it may be covered with moisture even in an atmosphere which would ordinarily be considered relatively dry. A uniform temperature is, therefore, more important in preventing rust on cans of honey than the dryness of the atmosphere.

Microscope to Distinguish Brood Diseases.

Question.—Would it not be well to publish articles telling beekeepers how to use the microscope to distinguish bacillus larvae and bacillus pluton in identifying the brood diseases? Wm. Bigel.

Illinois.

Answer.—The use of the microscope in bacteriology is such highly specialized work that few beekeepers would care to go far enough into the subject to be able to become proficient in differentiating the brood diseases in this way. The few who care to take up such a study can refer to the bulletins on brood diseases published by the Department of Agriculture. In most cases the beekeeper is able to distinguish between American foul brood, European foul brood and sacbrood by the appearance of the dead brood in the combs. In the few cases that are doubtful, samples can be sent to the Bureau of Entomology, Washington, D. C., for examination.

A New Packing Material.

Question.—Would not balsam-wool be good material for packing bees? John Nord.

Indiana.

Answer.—Balsam-wool is made up of specially prepared wood fiber and is to be had in sheets of different thicknesses. It has a low thermal conductivity said to be even lower than pure cork. It would be splendid material for packing but would be expensive. Since packing material such as forest leaves, planer shavings, wheat chaff or sawdust can often be obtained without cost, beekeepers are not inclined to purchase material of this character for packing the bees. Of course, such easily obtained packing material is not so effective in checking the flow of heat, but this can be easily made up by adding to the thickness of the packing. If it were necessary to reduce the thickness of the space for packing, balsam-wool would no doubt be very desirable for packing material.

Heating Honey for Bottling.

Question.—How long should honey be held at 150 to 160 degrees for the purpose of preventing granulation? James McClellan.

Illinois.

Answer.—The honey should be bottled immediately as soon as it reaches 160 degrees. If held at this temperature even for a short time, it will be slightly discolored. Great care should be taken when heating honey to such a high degree, for unless the heat is accurately controlled there is danger of scorching. For your purpose it may be better to heat only to 150 degrees unless you are equipped for perfect control of the heat.

Influence of Drone Comb in Supers.

Question.—Will bees store more honey in cells of drone size, in the supers, than in cells of worker size? E. C. McCarthy.

New York.

Answer.—Bees apparently store as much honey in cells of worker size, in the supers, as they do in cells of drone

size. When they are compelled to build new comb for storing honey, they almost invariably build cells of drone size if foundation is not given, but this is apparently for the purpose of saving wax instead of indicating any preference of the bees for storing honey in the larger cells. Extracting combs containing cells of drone size are objectionable during the fore part of the honey flow, because the bees frequently leave those drone cells vacant that are immediately above the brood-nest, apparently expecting the queen to lay eggs in them. If drone combs are used in extracting supers they should be sorted and supers containing such combs should be used late in the season after the impulse to rear drones has somewhat subsided.

Double-walled Hives in Building.

Question.—I have 33 colonies of bees in Buckeye hives located where there is but little protection from the prevailing north winds, and no protection from west winds. I have a good building which has two windows facing the west and two facing the south. Would it be practical to darken this building as one would a bee cellar and place these colonies inside as when wintering outdoors?

Pennsylvania. Geo. T. Bowen.

Answer.—It will be much better to leave the bees outside where they are, for if placed in such a building they will be denied winter flights as well as the benefit from the winter sunshine. You can provide a windbreak around the apiary by setting corn fodder against the fence or by building a wind screen of lath or boards, with spaces between to break the force of the wind, without deflecting it over the top.

Piece of Comb in Jars of Honey.

Question.—When putting up extracted honey in fruit jars with a piece of comb honey is there any way to treat the extracted honey to keep it from granulating? A. G. Stowe.

Kansas.

Answer.—You can prevent the granulation of the extracted honey for some time by heating it to about 150 degrees, then permitting it to cool sufficiently so that it will not melt the comb when poured into the jar containing the piece of comb honey. In other words, the treatment is the same as for straight extracted honey, except that it becomes necessary to let it cool to 140° or less before bottling.

Wintering in Two Stories.

Question.—I winter my bees outside in single-walled hives. Most of them have two or three supers well filled with honey, since I have not taken any honey from them this year. Will it be best to reduce them to one story or leave them two stories high for winter? R. R. Reynolds.

Tennessee.

Answer.—The chief advantage in wintering bees in two stories is that this, as a rule, insures ample stores for winter. If the lower story contains an abundance of stores for winter and spring, there is no advantage in leaving the second story on the hive during winter. In fact, except in warm climates, the second story is a slight disadvantage in that the space to be kept warm is greater than in the single-story hive. However, in the great majority of cases, better results are secured in your locality by leaving an upper story well filled with honey on account of the danger of colonies running short of stores when confined to a single story. The careful beekeeper can, of course, overcome this by feeding, but for your climate the second-story plan should work out well, thus avoiding the labor and expense of feeding.

Eggs Laid by Queen Fail to Hatch.

Question.—I have a queen that has been laying for about nine weeks and none of her eggs hatch. Will she ever become normal so that her eggs will hatch? A. Scaggs.

Illinois.

Answer.—A few cases have been reported of queens whose eggs did not hatch for several weeks after she began to lay, and later their eggs hatched in a normal manner. However, it would not be safe to depend upon such queens ever becoming normal and they should not be left with the colony except for experimental purposes.

Asbestos for Packing Bees.

Question.—Would a cap made of asbestos to slip over the top of the hive, be a good thing for winter protection?

Ohio. C. H. Titus.

Answer.—No doubt asbestos would answer for winter packing provided a sufficient thickness is used, but it would be expensive and no better than packing material which can usually be obtained without cost. Asbestos is used as an insulator for high temperatures, especially for boilers and steam pipes, because it does not burn when subjected to great heat. For packing bees, dry forest leaves, broken fine, fine planer shavings, dry sawdust, wheat chaff, or other such material can usually be obtained with but little if any expense. Such packing material is almost as effective as any prepared insulating material.

Removing Supers During the Winter.

Question.—Can I take off supers of comb honey at this season without injuring the bees?

New York. Chas. E. Robbins.

Answer.—Yes, provided the bees have gone below leaving the supers entirely free of bees. The supers can then be taken off and the hives packed for winter in the usual way. Instead of injuring the bees by removing these supers they should really be benefited provided enough honey is left in the brood-chamber, for they can then be packed properly for winter. However, if the bees have

extended their cluster into the lower super, it will be well to leave the super on the hive for it would be difficult to drive the bees out, at this season, in your locality. Furthermore, if the cluster is extended into the lower super, this would indicate that there is not enough honey in the brood-chamber for winter.

Wintering Weak Colonies.

Question.—I have two weak colonies, one of which covers three frames and the other, I believe, could be crowded on two frames. Can I winter them in their own hives, or should I unite them and lose one of the nice young queens? I would like to keep both of these queens. Mrs. J. W. Graham.
Indiana.

Answer.—The bees would no doubt winter better if united. Since you desire to save both of these queens, however, you can reduce the hive to fit the cluster by taking out the empty combs and filling the space with chaff cushion division-board, then packing the hive well. In your locality, southern Indiana, these little colonies can be wintered in this way, especially if they have winter stores of good quality. It is surprising what small colonies can be wintered, with a little extra care, in this way. You could also winter these nuclei in the cellar provided you have a compartment in the cellar in which the temperature does not fluctuate greatly from about 50° Fahrenheit.

Amount of Stores Consumed During Winter.

Question.—How many pounds of stores will it require per colony from the first of November to the 15th of May in this locality?
Michigan. Joseph E. Lang.

Answer.—The amount of stores the bees will use from the 1st of November until May 15 will depend upon the character of the winter and the condition of the colonies, as well as upon the amount of nectar the bees may be able to gather next spring before May 15. Whether the bees are wintered out of doors or in the cellar will also make a difference in the stores consumed. As a rule, strong colonies consume from 15 to 20 pounds of food during the winter proper before brood rearing begins in the spring, when wintered out of doors, in the North. Further south they consume more. When wintered in the cellar they consume considerably less if conditions are favorable. From the time they are put into the cellar in November, until taken out the latter part of March or first of April strong colonies consume only 10 pounds or even less. However, as soon as brood-rearing begins in the spring they consume their stores with increasing rapidity so that it is not safe to let colonies go into the winter with less than 30 pounds of stores. It is better still to leave each colony 40 to 50 pounds, in order to avoid the necessity of feeding in the spring.

Clarifying Honey When Bottling.

Question.—After melting honey in the 60-lb. tins I fill it in glass jars. I find it necessary to place these jars in an oven to make the honey clear. Why is it that it will become clear by heating it in the jars and does not become clear when heated in 60-lb. cans?
Pennsylvania. Ralf Gaston.

Answer.—The honey can be made as clear in the 60-lb. cans as it can in the jars, by applying heat until the crystals are entirely dissolved, but in pouring this clear honey into the jars air bubbles become incorporated in the honey. Heating the honey in the jars causes these bubbles to rise, thus making the honey clear.

Feeding Bees in Cellar.

Question.—Can I feed sugar syrup to bees that are short of stores, in the cellar?
Minnesota. Ed. Taylor.

Answer.—Yes. This can be done as an emergency when feeding has not been attended to at the proper time. The colonies that are short of stores can be taken down from the piles and each can be fed a sufficient amount of syrup to last until spring, by means of the ordinary friction-top pail feeder. This work should be done with the least possible disturbance to the bees. After the feeding is done the hives can be put back in the piles as before. In making syrup for this emergency feeding it is well to make it somewhat heavier than for feeding at the regular time. Since the syrup should be taken down as quickly as possible, it is well to feed it while hot. When fed in this way it is best to add a level teaspoonful of tartaric acid for each ten pounds of sugar used in making the syrup since it is more liable to granulate when fed rapidly. The acid should be put into the water while the water is being heated, then after the sugar has been stirred in, heat should be applied until the syrup reaches nearly boiling point again in order that the acid may have time to act upon the sugar.

Bees Tear Down Diseased Comb.

Question.—One of my colonies had a little of what I thought was Amreican foul brood. In looking through the hive later I found that the bees were tearing down the cells of these suspicious combs, having patches as big as one's hand torn down to the midrib. Are these bees actually tearing the infected portion of the combs out of the hive?
Michigan. J. P. Chandler.

Answer.—Bees often tear down the cell walls in the manner you describe. They do this when the comb becomes old and the cells become too small because of the accumulation of cocoons. Whether bees are ever able to eliminate American foul brood by tearing away the infected portion of the comb has never been definitely proven, but this is extremely doubtful. The trouble is they usually tear down only small patches at a time. If they would tear down all of the comb at the same time they might possibly eliminate American foul brood in this way.

A. I. Root's Story of His Own Life

The hand of the diligent shall bear rule; but the slothful shall be put under taskwork.—Prov. 12:24.

In June, 1876, the orders for extractors, instead of stopping, seemed to come faster. The section boxes, too, had proved a success and ever so many of them were wanted. The worst of it was that the beekeepers did not discover that they wanted them until the bees were ready to use them. Then the foundation having proved a success, too, they wanted that. To cap the climax, my own bees filled the hives at a time when it would have been almost madness on my part to have thought of extracting, and as my customers were clamoring for section cases, of which I had none, of course my bees didn't have any either. I just kept putting on upper stories and empty combs. To be sure I hired more help, but as the business was new, and much of it of a nature that made all of us green hands, is it any wonder that in spite of all I could do orders could not be sent out promptly. I did my best, the windmill included, but the press was too great and I had to get a steam engine. I presume I should have written some of my customers and told them of the delay to expect, but with looking after new help and the like I didn't find time even to do that. Finally, I announced that I would agree to pay bills for damages, including bother and all, even for swarms that left and went to the woods, in so far as I was responsible.

It seemed almost incredible that a good 4½ H. P. steam engine, all complete with boiler, could be had for $300, and yet I sent a check for one one Monday morning in June, 1876, and had it running all my machinery on Friday of the same week. Only about three hours' work was required to get it into the basement and have it all ready to fire up. With 40 pounds of steam it gave me more power than I needed, and I frequently could run saws on light work even when there was only 15 pounds of steam. The cost of fuel did not exceed 25 cents a day, for I used sawdust and refuse mostly.

Difficulties in Making Ends Meet.

At one time in my life I felt it a duty to reduce the wages of my employees on account of the fact that in spite of all I could do, my expenses were greater than my income. I had been dreading to speak of the matter for a long time, disliking to give the pain I felt it must to those about me. I was astonished to find that all acquiesced pleasantly and cheerfully, one of the employees even mentioning that he had expected it. Well, in spite of what seemed close economy, expenses every day determined to exceed the income. Paper and materials had to be purchased for another year, or work could not go on at all, and the daily demand for money, for purposes that could not be set aside, seemed coming thicker and faster. Finally, the source from which money had been furnished me for so many years with no other condition than that I paid the interest promptly, unexpectedly asked for security.

I always prided myself on being able to get along without asking anybody to be responsible for me in any way, and on the same ground could decline being responsible for the mistakes of others. I had talked for years of the beauty of having everybody independent, of going without things rather than run any risk of causing others to suffer by my fault or failure, and of going in debt no farther than my property would safely make good under any circumstances. When I looked about to see where the errors had been, to see where I had made bad or injudicious investments, everything looked all right. Yet the fact stood squarely before me that I was in debt in a way that I had no business to be, and that it was positively wrong and sinful. Hand in hand, my wife and I, for she shared all the trials and triumphs of business, bowed before that Father who had so often guided us in trouble, and very soon we saw our mistakes and the safe path for the future.

Some little time before this I had been conducting the Sabbath school in a little town five miles from Medina. Although the livery man had offered to give me a horse and rig for 75 cents, about half the usual price, I found that this would amount to $39 in the course of a year, an amount that I decided at once could not be spared. For this reason I resolved in my own mind that I would go on foot. I did not mention it, for I wished to test my powers of walking first, and I really longed for the time that I might see how

much of a task it was going to be. If I lacked strength I felt that it would be given me, and this feeling was intensified by reading on a scrap of paper that fell in my way, that Moody had said God always gave all the strength that was needed to those who were willing to work for him. The first Sabbath I walked the ten miles very easily, but as the road was quite snowy I felt the effects of the walk for a day or two. This I expected, but the next time I felt it much less, and about the third trip, hardly at all. After that there was scarcely anything I looked forward to with as much pleasure as my Sabbath afternoon's walk.

The Burdens of a Growing Business.

One Saturday afternoon in May, 1878, a friend came, who said he wanted to purchase some bee fixtures, but he insisted that I wait on him myself for he wanted to have a talk with me and did not want to be waited on by any of the clerks.

Quite a number of new men had just been set to work and the whole establishment needed all the supervision my poor brain could give it. One man was grooving top-bars for the foundation and his groove was not in the center nor near deep enough. Another had lost his gauge and was cutting up stuff without it. The dovetailing saws, for some unaccountable reason, were making the dovetails in the sections so loose that the pieces would almost fall apart and no one could account for the sudden freak. The printers were calling for copy, clerks were waiting for me to examine the day's mail which lay in the proper heaps all around my typewriter, and besides the bell was just then ringing for our Saturday afternoon prayer meeting. To be sure, I was standing still, for I was wondering how I could best bring order out of all this chaos, and my friend very naturally supposing I had nothing to do, thought I could just as well attend to him as not, and so commenced to ask about the price of foundation.

Unfortunately, when I was worried if there was one thing I could not remember, it was the price of foundation. I told him as well as I could how much I had to attend to and that the boys could tell him all about it. My friend did not approve of prayer meetings, and if I went there instead of waiting on him what would he think? I could not explain to him that I felt it would be better to lose a great many dollars than to miss the meeting, so in a sort of cowardly way I fixed things as well as I could and then reached the meeting just ten minutes before it closed. I took no part and I fear I studied on saws more than on the danger I was in from so much care and worry.

In 1877, a beekeeper wrote me a long letter enclosing a stamp and he was greatly disappointed because I wrote only a postcard reply to his questions. I wanted to help every one, but so many failed to consider that their letter was but one among thousands, and that to give the answer they wanted would have been at the time an impossibility. As it was it was taking the greater part of the time of three different clerks to answer even on post cards the questions that were asked. It was hard to be disobliging, but as I had the care of a manufacturing plant and an apiary, besides publishing a journal, very little time was left. I felt that I could do the most good all around by giving my best efforts to Gleanings, and to do this well I had to spend much of my time in the apiary lest I should be in danger of giving theory instead of practice.

And, when orders for goods came in I had to show the men in the factory just how the goods should be made and even try new goods in my hives to see how they would work.

I tried to read all the letters that were sent in, as well as all the cards. I felt that those who wanted to hear from me individually should read Gleanings with more care. I was anxious to help and to please every one, was studying all the time different plans to make hives, extractors, foundation, etc., cheaper and simpler, and it was a rare pleasure for me to tell each month what I had discovered and to get post-card replies telling how the beekeepers had succeeded. Even at that time, however, I was able to use but a small part of the correspondence sent me, but I tried to have all of my friends represented so far as possible.

Many Careless Customers.

In June, 1877, I received three boxes and one barrel of beeswax without a single scrap of paper to tell where the wax came from. I had letters at the same time from people saying they had sent me wax and asking for the money, but I couldn't tell how much they had sent. While hunting the boxes over trying to find some clue, even a pencil mark, I often felt as if I could shake the shipper for having caused me so much trouble when a single scratch of a pencil would have saved it all.

I had one letter from a party enclosing $1.50 for a book, but nothing in the shape of a name could be found either on the letter or on the envelope except the initials "C. W." I found on my mailing list a name that might have corresponded to this but could not tell for sure. I had quite a bundle of letters from unknown friends, many of which contained money. It made me feel sad to look over these letters, feeling that I

was obliged to keep the money without rendering a single equivalent just because they forgot to sign their names. Several times I wrote to the postmasters but this seldom did any good and in several instances I could not find out either the town or the state. To cap the climax, I received one postal card addressed to me without a single word on it.

Later on there was a great sheaf of letters before me without names or addresses, and the trouble was getting worse and worse. I did not know whether everyone was getting in such a hurry or what the trouble was. I did not know of any remedy except to have the name and address printed on the stationery in every case. Gummed labels would not do because they would be forgotten. In many instances, even when the names were written on, they were so badly written and counties so often omitted that I had a regular standing quarrel most of the time with someone or other, because valuable goods went to the wrong place. I announced that I was almost ready to print free the addresses of a hundred and fifty thousand customers that I had at that time, if I could only be sure that they would all use the stationery every time they wrote to me.

Trouble with Express Companies.

In May, 1879, a customer living in Texas ordered three $3.00 queens. To avoid delay and save expense I tried to prepay the charges, but the express company could not tell what the charges would be over the southern lines, so they would not receive the money in advance. Time passed and the queens were not delivered. A tracer was sent and after long delays they were found at some point in Texas held until back charges should be paid. Neither myself nor my customer had been notified where the queens were nor what the trouble was. The cages had been made in such a way that the officials could easily see that they contained bees that were perishable, and yet they put them up on a shelf and let them die.

Nearly two months after, we were asked for the back charges, also whether we wanted the dead bees forwarded to destination. I sent word that they should throw them out of the window, stifling my temper as best I could. They very kindly consented to throw them out, but sent back for $1.75 charges for carrying them so far and keeping them until they starved. I felt very much then as if it would be inexpressively delicious and soothing to be permitted the luxury of tearing that Texas man's shanty down and giving him such a shaking that he would never think of starving any more innocent bees so long as he remained in the express business. But I put away such thoughts, paid the $1.75 and prayed for patience.

What do you suppose happened? Nothing different from what has happened a great many times in my business troubles and trials. A gentleman came in a few mornings after, introducing himself as the superintendent of our express line. He said he had noticed the amount of business we gave them and asked if he could do anything to aid us. In a twinkling our printers had some neat little labels directing any express agent in the United States that all packages bearing this label were, under all circumstances, to be forwarded without delay. These were signed with the superintendent's name. He also made arrangements to carry queens, smokers, etc., over any or all northern lines for one single charge of 25 cents and he fixed many other things greatly for the comfort and convenience of myself.

Utilizing Energy to Best Advantage.

Before the days of shorthand I used to receive a great many requests for personal answers to letters and it was very hard to refuse so simple a request. Yet it was absolutely impossible to comply with all of the requests. For a year I had been unable to answer personally the kind letters I received from my own brothers and sisters.

I learned from experience that it was far better for me to answer each letter the day it was received. If I commenced laying them away until some better time, a pile would accumulate and I had them on my conscience all the time, worrying me every day, perhaps for months. Finally I adopted the plan of having close at hand a lot of lead pencils sharpened to a keen point and after reading a letter through, being better prepared to answer it then than at any other time, I indicated right on the letter with the pencil, brief directions as to how the letters were to be answered. The words I put in at the proper point were something like these: "Yes," "No," "Perhaps," "Probably," "O. K.," "Can't Promise," "See A B C," "Do what he asks," etc., etc. Of course, in instances that especially demanded I often wrote more at length on the margin of the letter. From these pencilled notes the clerks wrote the answers, but before the cards and letters were mailed I read every one carefully, and if corrections were necessary I made them with these same fine pencils.

In order to do this, I had to economize my mental powers to the utmost. After working an hour or two at the letters, I usually took a run over the grounds or through the factory to see how the work was progressing, and this alternation was

(Continued on page 807.)

Classified Advertisements

Notices will be inserted in these classified columns for 7c per word. You must say you want your advertisement in the classified columns or we will not be responsible for errors. For special conditions on bee and queen advertising please write us. Copy should be received by 15th of preceding month to insure insertion. Cash with copy, if credit has not been established previously.

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HONEY AND WAX FOR SALE.

FOR SALE—White clover comb honey. J. F. Moore. Tiffin, Ohio.

TUPELO honey in 5-lb. pails and 60-lb. cans. J. W. Sherman, Valdosta, Ga.

FOR SALE—Clover honey in 60-lb. cans. None finer. J. F. Moore, Tiffin, Ohio.

FOR SALE—Pure clover honey in 60-lb. cans. J. Herman Pohl, Fowler, Mich.

NEW crop clover honey in new 60-pound tin cans. D. R. Townsend, Northstar, Mich.

FINEST white clover honey, also light amber. Lewis O. Klaty, Carsonville, Mich.

FOR SALE—Buckwheat honey in 5-lb. pails and 60-lb. cans. S. Van Auken, Duanesburg, N. Y.

HONEY for sale, any kind, any quantity. The John G. Paton Co., 217 Broadway, New York City.

CLOVER honey in new 60-lb. cans. Sample, 20c. One ton baking honey. W. B. Crane, McComb, Ohio.

FOR SALE—Finest white clover honey in 60-lb. cans. Write for prices. A. S. Tedman, Weston, Mich.

NO. 1 comb honey, carriers of eight, $5.50 per case. Fancy comb for sale in quantity. J. F. Coyle, Penfield, Ill.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—Buckwheat honey, A-1 quality, in new 60-lb. cans, $12.00 per case. Woodward Apiaries, Clarksville, N. Y.

FINEST white clover honey, almost water white, in 60-lb. cans. Prices on request. Irvin R. VanDevier, Medina, Ohio.

FOR SALE—First quality basswood honey, 12½c per lb. in ton lots. Thos. Atkinson, R. F. D. No. 5, Omaha, Neb.

BLENDED raspberry and milkweed, two of the best honeys produced in northern Michigan. Left with the bees until thoroughly ripened. Unexcelled for table use. Price in 60-lb. cans, 15c per lb. In 10-lb. pails, postpaid, $2.50. Sample by mail, 20c, which may be applied on purchase of honey. Elmer Hutchinson & Son, Lake City, Mich.

FOR SALE—Lenawee County extracted clover honey in 10-lb. pails or 60-lb. cans. Nelson Dewey, Adrian, Mich.

CLOVER HONEY—5-lb. pails, $10.80; 60-lb. cans, $8.00; 2 60's, $15.00, f. o. b. Hamler. C. J. Appeldoorn, Hamler, Ohio.

FOR SALE—Amber and buckwheat honey in 5-lb. pails and 60-lb. cans. C. J. Baldridge, Homestead Farms, Kendaia, N. Y.

FOR SALE—Very fine quality of clover and buckwheat honey, 1924 crop; 5-lb. pails and 60-lb. cans. C. N. Ballard, Valois, N. Y.

CLOVER and basswood blended by the bees, color and body fine. Prices upon request. State amount wanted. W. A. Jenkins, Rock Port, Mo.

FOR SALE—New crop clover honey, finest quality, put up in 60-lb. cans, also 5-lb. pails. Write for prices. W. M. Peacock, Mapleton, Iowa.

FOR SALE—5 cases, 60 lbs. net, extracted buckwheat honey packed in 5-lb. pails, at $7.00 per case. Noel J. Loucks, Springboro, R. F. D. No. 3, Pa.

FOR SALE—Sweet clover and cotton honey of choice quality. In 60-lb. cans and bulk comb in 5-lb. pails. Allenville Apiaries, Allenville, Alabama.

CHOICE white clover honey in 5 and 10 lb. pails and 60-lb. cans. Prices on request. Sample 15c. Sundberg Bros., R. F. D. No. 3, Fergus Falls, Minn.

FOR SALE—Extra fancy, white clover extracted honey, also comb honey, new cases, new crop. Write for prices. Edw. A. Winkler, R. F. D. No. 1, Joliet, Ill.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gallon barrels. Samples and prices on request. A. I. Root Co., 16-18 Jay St., New York City.

FOR SALE—Northern Michigan clover honey in new 60-lb. cans, $14.00 per case (120 lbs.) f. o. b. Merritt. 5 cases at 11c per lb. J. H. Corwin, Merritt, Mich.

HONEY for sale in 60-lb. tins. White clover Indian crystallized, 13c per lb. L. A. West Indian honey liquid, 11c per lb. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—Comb and extracted white clover honey, extracted in 60-lb. cans, and 5 and 10 lb. pails. Prices given on request. Sample, 15c. F. W. Summerfield, Waterville, Ohio.

CHOICE WHITE CLOVER HONEY, one-half gal., $1.35; 1 gal., $2.50, postpaid to 3rd zone. Twelve 5-lb. pails by freight, $10, not prepaid. Sample, 20c postpaid. Elmer Porter, Roxabel, Ohio.

FOR SALE—No. 1 white comb honey, $5.50 per case, 24 sections to case, six cases to carrier. Dark extracted (about half clover), 10c per pound; two 60-lb. cans to case. H. G. Quirin, Bellevue, Ohio.

HONEY—Free wholesale quotations on 1924 crop of white clover and buckwheat extracted honey, in 60-lb. cans, 5 and 10 lb. pails, 3 oz., 8 oz. and 16 oz. glass tumblers. Address Roscoe F. Wixson, Sales Dept. Dundee, N. Y.

FOR SALE—Honey in 60-lb. cans. Sweet clover, basswood, white clover and other flavors. Tell us what you want. Beekeepers who need more honey for their trade, and solicitors should write us. A. I. Root Co., 230 W. Huron St., Chicago, Ill.

WE are closing out the balance of our 1924 crop of white clover extracted honey at 13c per lb. on track here at Northstar. This honey is the finest procurable. Put up in new 60-lb. net tin cans, boxed two cans to the box for shipment. If you have an exacting trade to supply we offer you this fine honey as one that will fill your bill. All low grade is sold. E. D. Townsend & Sons, Northstar, Mich.

HONEY AND WAX WANTED.

WE will pay cash for a limited quantity of pure average domestic beeswax. Write for our prices. The A. I. Root Co., Medina, Ohio.

WANTED—White clover extracted honey in 60-lb. cans. Wm. C. Brown, 809 Maple St., Battle Creek, Mich.

WANTED—White clover honey in 60-lb. cans. Mail sample and quote price. Roscoe F. Wixson, Dundee, N. Y.

WANTED—Cheap grade extracted honey for making anti-freeze. Write quick what you have and price. John N. Prothero, DuBois, Pa.

WANTED—Comb and extracted honey in ton lots or more. Send sample and quote price. C. J. Morrison, 1235 Lincoln Way West, South Bend, Ind.

WANTED to buy amber and dark honey in 60-lb. tins. Name price and if interested will ask for sample. A. G. Woodman Co., Grand Rapids, Mich.

WANTED—A car or less quantity of clover honey in 60-lb. cans. Mail sample and quote lowest cash price for same. A. W. Smith, Birmingham, Mich.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

OLD COMBS WANTED—Our steam wax presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1924 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

FOR SALE.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

STEVENS single-shot rifle, 25 rim, new; want honey extractor. James Wheeler, Maroa, Ill.

50 ROOT 10-frame extracting chambers, $1 each; covers, excluders. Hofner Johnson, R. D. No. 6, Salem, Ohio.

FOR SALE—Two-frame reversible extractor and one Root uncapping can basket. Erwin Schmidt, Medina, Ohio.

CONNECTICUT and Rhode Island headquarters for Root's beekeepers' supplies. A. W. Yates, Hartford, Conn.

MAKE queen introduction SURE. ONE SAFIN cage by mail, 25c; five for $1.00. Allen Latham, Norwichtown, Conn.

SELLING 100 ten-frame hives, complete or separate, new or used. No disease. Hickory Shade Apiary, Otterville, Mo.

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest price. E. S. Robinson, Mayville, N. Y.

HIVE BODIES—New cypress dovetailed bodies, nails and rabbets, ten-frame, five for $3.75; 100 for $65.00. The Stover Apiaries, Mayhew, Miss.

FOR SALE—Good second-hand 60-lb. cans, two cans to case boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

EIGHT-FRAME 7-wire and wood excluders, practically new, 40c each. No disease. The Stover Apiaries, Mayhew, Miss.

ADAPTABLE BEEHIVES, single or double-walled, are sound in principle and are practical. For free information address Geo. P. Wood, Peekskill, N. Y.

HONEY-NUT CHOCOLATES. A new and delicious confection made of pure honey, nuts, fruits, etc., $1.00 lb.; 50c, ½ lb. postpaid. Wholesale prices on application. J. D. Kroha, 87 North St., Danbury, Conn.

BARGAIN in frames. White pine frames, $5.00 per 100; $45.00 per 1000. Send 10c for sample. New 8-fr. Danz. shallow extracting supers, 20c each. The Stover Apiaries, Mayhew, Miss.

BEES AND QUEENS.

WHOLE colonies of bees, if advertised for sale in these columns, must either be guaranteed free from disease or, if not so guaranteed, the exact condition of the bees and the conditions of sale must be clearly stated in the advertisement; or, it will be satisfactory if the advertiser will agree to furnish a certificate of health from some authorized bee inspector at time of sale.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

ITALIAN queens, $1.00 each in season. Graydon Bros., R. F. D. No. 4, Greenville, Ala.

PACKAGE BEES for 1925. Pure Italians. Write for descriptive price list. J. J. Scott, Crowville, La.

BEFORE ordering get our prices on package bees for 1925 delivery. W. C. Smith & Co., Calhoun, Ala.

IF you want two-frame nuclei for 1925 let me book your order now. Write for prices. E. F. Day, Honoraville, Ala.

ITALIAN bees and queens, 1925, can save you money. Figure your needs and get my prices. W. E. Buckner, Mt. Vernon, Ga.

FOR SALE—Three-banded, leather-colored queen bees. None better. Write for prices. M. Bates, Greenville, Ala., R. F. D. No. 4.

BRIGHT Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Write for prices on package bees. T. J. Talley, Greenville, R. F. D. No. 3, Ala.

FOR SALE—40 colonies of bees guaranteed free from disease, in Root hives. Good condition. $10.00 each. Jas. B. Gregg, 892 S. Main St., Akron, Ohio.

FOR SALE—Bright Italian queens, $1.00; 6, $5.00; 1-lb. package bees with queen, $3.00; 2-lb. package with queen, $4.50. Powell Owen, Greenville, Ala.

GOLDEN ITALIAN queens, producing large beautiful bees, solid yellow to tip. Package bees, nuclei circular, 1925 ready free. Dr. White Bee Co., Sandia, Texas.

TESTED QUEENS, $1.00 each. For the fall and winter months. Delivery guaranteed. Queens are mailed from my yards every month of the year. D. W. Howell, Shellman, Ga.

FOR SALE—Three-banded Italian queens. Untested, 1 to 11, $1.00 each; 12 to 49, 85c each; 50 to 100, 75c each; tested, $2.00 each. Satisfaction guaranteed. Ready to ship June 1 to June 10. R. B. Grout, Jamaica, Vt.

FOR SALE—80 colonies of bees, guaranteed free from disease, 4 acres of land, 4-room house, honey-house, power extracting outfit and other equipment. Good location in irrigated district. No failures. Write for particulars. W. C. Forcher, Grand View, Idaho.

BOOKING orders for early queens, queenless package bees and package bees with queens. Write for delivered prices. I ship on the day you name. Jasper Knight, Hayneville, Ala.

CHRISTMAS greetings, brother beekeepers! Write us for special offer on bees during December. We can save you money on your package bees. The Louisiana Modern Apiaries, M. Voinche, Prop., Bunkie, La.

FOR SALE — Rule Brothers Straight-Line three-banded Italian queens, satisfaction guaranteed. Untested, $1.00; 25 or more, 90c; tested, $2.00; 25 or more, $1.75. Rule Brothers, Terlton, R. F. D. No. 1, Box 30, Okla.

I AM now booking orders for package bees for 1925. Three-band Italian stock. State inspected. There has never been disease in this section. Will begin shipping April 20. Write for circular and prices. N. L. Stapleton, Colquitt, Ga.

THREE-BANDED Italian bees and queens. I am booking orders for 1925 delivery, 2-lb. package bees with select untested queen, $4.50; select untested queen, $1.00; select tested, $1.50. Safe arrival and satisfaction guaranteed. J. Allen, Catherine, Ala.

WRITE us for low prices on high grade bees and queens, safe delivery, satisfaction, no disease guaranteed. One package or nucleus or carload lots. Guarantee to ship bees on dates stated. The Louisiana Modern Apiaries, M. Voinche, Prop., Bunkie, La.

FOR SALE for 1925, 3-frame nuclei, three-banded queens and also pound packages; begin shipping April 1. Queens, $1.00 each; three-frame nuclei, $5.00; 3-lb. package, $5.00 each. Walker & Son, Vidalia, Ga. Address your inquiries until further notice to Curd Walker, Jellico, Tenn. 25 years' experience.

ONE 2-lb. package bees, with or without frame brood, $5.00; 25, $118; 50, $225; 100, $425. One 3-lb. package, $5.50; 25, $135; 50, $250; 100, $475. Will furnish good young Italian queen with each package. Tested queen, 50c extra. Established 1909. Have no disease. F. M. Morgan, Hamburg, La.

BRIGHT American Beauty Italian bees and queens, booking orders for special two pounds of bees on frame emerging brood and honey, queen introduced, $4.75. Untested queens, after March 15, $1.00. Certificate of health and guarantee safe arrival. Tupelo Apiaries, J. L. Morgan, Apalachicola, Fla.

WE are now booking orders for our high grade queens for spring delivery. Prices: Untested, $1.00 each; 25 to 75, 85c each; 100 70c each. Tested, $2.25 each; 25 or more, $2 each. Select tested, $2.65 each; 25 or more, $2.25 each. One-fourth down. Write for circular. E. E. Salge & Bros., Weslaco, Texas.

BEFORE buying your package bees on comb for 1925 kindly write us. We can save you money on 10 or more package lots. We are prepared to ship bees on a large scale and have the light three-banded stock only. We begin shipping April 20. Remember we guarantee our stock to be free from disease. All shipments go out with government health certificate. Central Louisiana Apiaries, Hamburg, La.

ORDER DIRECT FROM THE SHIPPER. We do all our work ourselves trying to eliminate mistakes being made. We ship only nice three-banded Italians with a government health certificate. Shipped on comb of honey, the natural food for transit. Easy to transfer. Each package contains a select untested three-banded queen. 10 3-lb. packages, $45.00; 25 3-lb. packages, $108.75; 50 3-lb. packages, $212.50; 10 4-lb. packages, $52.50; 25 4-lb. packages, $127.50; 50 4-lb. packages, $249.70. Will start shipping April 15. 15% down, balance at shipping time Orders booked in rotation. C. A. Mayeux, Hamburg, La.

PACKAGE BEES for April, 1925. 1 standard Root frame honey, 1 untested three-banded Italian queen, and four pounds bees, 1 to 24, $5.50 each; 25 to 49, $5.25; 50 to 100, $5.00. Orders booked in rotation. Shipments to be made April 20 to May 20. A government health certificate with each shipment and I guarantee safe delivery. 10 per cent books your order, balance at shipping time. L. C. Mayeux, Hamburg, La.

SEASON 1925. Southern Bee Farm Apiaries, John St. Romain, Prop., Marksville, La. The home of the good Italian queen. Will be ready for shipment April 15. Prices delivered queens: Three-banded Italians, 1 extra good breeding queen, $5.00; package bees, delivered prices: one 2-lb. package with queen, $3.80; one 3-lb. package with queen, $4.90; one 4-lb. package with queen, $6.00. Large orders of bees will be given special attention. Terms, 25 per cent with order, balance 20 days before shipment.

OVERSIZE two-pound packages (2½ pounds when caged) of young hustling, disease-free, Italian bees, with select untested queen, will insure you a rousing colony by the honey flow. These bees are bred right, caged right and delivered to you right, or I make them right. Order early to get shipment to suit your location. Ten per cent cash with order, balance before shipment. One package, $5.25; 12 or more, $5.00 each. Express prepaid. P. M. Williams, Ft. Deposit, Alabama.

FOR SALE—In famous palmetto-mangrove, orange district, 125 colonies bees in single-story, machine-made, cypress hives, new 1921. Holds 25 frames, 11¼x17⅜ in., folding legs, hinged covers, fine for extracted or bulk comb honey. Easily manipulated or honey removed sitting in chair. Absolutely protected from robbers by adjustable screen manipulating top. 35 extra hives, 20 5-frame comb boxes, 4-fr. reversible honey extractor, 15 honey barrels, 50-barrel honey tank, moving screens. Guaranteed free from disease. Price $900. Fine honey district, large town, paved roads, fine schools and churches. Reason for selling, am seriously crippled. A. F. Brown, 129 Cypress St., Daytona, Fla.

ANNOUNCING—The loss of our records when our offices burned on September 29. We beg our customers who closed contracts for next spring deliveries to please write us as soon as convenient and when possible to please send copy of our last letter. This does not apply on orders received after September 29. On account of the loss of our mailing list we don't know that we will issue circulars for the coming season. We will quote prices on receipt of inquiries. We had to return so many orders the past season on account of the heavy demand for our "Honey Girl" Italians, that we increased extensively. This will increase production and decrease expenses per package. We pass this saving on to you, by lowering our prices on nuclei and packages; untested queens and tested queens, same prices as last season. Select tested queens, suitable for breeding queens, shipped with 2 lbs. bees, $10. A few "scientifically" selected queens priced according to individual merit. Our "Honey Girl" Italians satisfy. Safe arrival guaranteed. Certificate of inspection with each shipment. We solicit your early correspondence. Cottonport Honey Girl Apiaries, Hamburg, La. (Former address, Cottonport, La.)

MISCELLANEOUS.

THE BEE WORLD—The leading bee journal in Britain and the only international bee-review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. Send us a post-card today. It is well worth your little trouble. The Apis Club, Benson, Oxon, England.

"Bees and Honey," Geo. W. York, Editor; $1.00 a year; 6 months' trial, 30c. Sample free. "Bees and Honey" with "Gleanings," both one year, $1.50. Address York Honey and Bee Supply Co., Spokane, Wash.

Western Honey Bee, 428 South Hewitt St., Los Angeles, Calif., published by western beekeepers, where commercial honey production is farther advanced than in any other section of the world. $1.00 per year. Send for sample copy.

THE BEEKEEPERS' REVIEW has been published continuously since 1888. Monthly, $1.00 per year; 4 months trial, 25c. Your address on a postal will bring a sample copy and clubbing offers. Address The Beekepers' Review, Almont, Michigan.

WANTS AND EXCHANGES.

WANTED—100 to 200 colonies bees in good location in mountain valley, in Wyoming or Montana. Would consider Oregon. Must be near good trout fishing. What have you? S. Fisher Lawrence, Boulder, Colo.

HELP WANTED.

WANTED—Married man to work in bees and poultry. State experience in bees, wages expected and references. House and garden furnished. E. L. Lane, Trumansburg, N. Y.

Everything About Rhode Island Reds

Send for Remarkable FREE BOOK

"Blue Ribbon Reds"—the latest book on the best all purpose breed—has 12 drawings illustrating type and 14 illustrating color. Full page picture of R. I. Reds in natural colors, suitable for framing.

Book tells how to judge—mate for color and shape—obtain fast growth and large size—breed up heavy egg-laying strain—cull—prepare for show room—feed poultry of all ages—linebreed—treat sick fowls—build poultry houses and equipment—and covers many other subjects. Book given absolutely free with three year subscription to

Rhode Island Red Journal only journal in the World devoted exclusively to Rhode Island Reds. Tells how to make big money with them—how to buy, sell, get greatest pleasure, most profit—everything you want to know about Rhode Island Reds. Published monthly. **50c year—3yrs. $1.00.** Send dollar bill today and get book FREE.

RHODE ISLAND RED JOURNAL
333 Democrat Bldg. Waverly, Iowa

(Continued from page 803.)

usually kept up from before six in the morning until after nine at night. I had to decide many difficult points on pretty short notice, but I was obliged to decide hastily or not at all.

My typewriter I used only for my work on the journal and it was in use the greater part of the time.

In the 80's, when business was up to its highest notch, say just preceding or during the honey flow, I almost always broke down or came pretty near it. At such times there were three things that usually put me on my feet again. One was a good square meal, second was getting out of the office and going out into the open field and the third was sleep.

I noticed many times when I kept on with my work until dinner time, that after being seated at the table I was just about exhausted. In fact, I would often sit down to a meal, all in a tremble, and with a dizzy faintness. Usually I felt tolerably well about the time my meal was finished.

During the summer of 1887 I secured great relief by taking a nap in the forenoon or in the afternoon, and finally I began to notice that when business crowded so these naps came just before mealtime, I could sit down to my meals without any of the symptoms of exhaustion. Sometime before this I thought I was so busy just before mealtime that I could not take time to have a nap, but I finally made it a practice to get just about a half hour's sleep before dinner and supper. If any sort of patent medicine had ever given me as much help as this, I would certainly have boomed it.

FREE! ART PICTURES

of Ideal Chickens in Beautiful Natural Colors, 8 x 11 in., suitable for framing. Given only with **Poultry Tribune**—every issue. **World's Great Poultry Paper.** Chuck full of money-making ideas, articles, news by foremost poultry authorities. Pub. monthly, 80 to 120 pages. **SPECIAL OFFER:**

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2½-pound Cans, in crates of 100	$4.00 a crate
5-pound Pails, in crates of 100	7.00 a crate
10-pound Pails, in crates of 50	5.00 a crate
60-pound Tins, new, 2 tins per case	.90 a crate
60-pound Tins, used, 2 tins per case	.25 a crate
160-pound kegs	1.20 a keg

GLASS JARS WITH GOLD-LACQUERED CAPS

8-ounce capacity, 2 dozen per carton	.90 per carton
16-ounce capacity, 2 dozen per carton	1.20 per carton
3-pound or quart, 1 dozen per carton	.90 per carton

HOFFMAN & HAUCK, Inc., 1331 Ocean Avenue, Woodhaven, New York

HONEY PAILS

MANUFACTURERS OF
"BLOSSOM-SWEET"
AND
BADGER BRAND
5 and 10 lb. Honey Pails.

We specialize in 5 and 10 lb. round pails and 60 lb. square cans. Plain and Lithographed cans of all descriptions.

WILKES-BARRE CAN CO.
ESTABLISHED 1856
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World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

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have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.

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Patents

Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON.
McLachlan Bldg., Washington, D. C.

(Continued from page 753.)

11½-12c. Wisconsin, white basswood and clover, 12-13c; light amber, 10c. Comb: Sales to retailers, 24-section cases Illinois, Michigan, Indiana, Minnesota and Wisconsin fancy and No. 1 white alfalfa and clover, $4.75-5.25; No. 2, $4.00-4.25; amber, $4.00-4.25; poorly filled combs, $3.50-4.00. Intermountain, white alfalfa and sweet clover, $5.00-5.25; mostly $5.25. Beeswax: Sales to retailers and manufacturers of electrical supplies, cables and shoe polish, domestic, crude yellow, 32-33c; dark, 28-29c, all per lb.

DENVER.—Demand limited, market steady. Extracted: Sales to jobbers, Colorado, sweet clover and alfalfa, white 13c; light amber, 12c. Comb: Colorado, 24-section cases white sweet clover and alfalfa, fancy, $5.40; choice, $5.04.

NEW YORK.—Extracted: Receipts moderate. Good export and local demand. Market firm. Sales to wholesalers, jobbers, confectioners, bottlers and bakers, per lb., New York, white clover, mostly 12½-13c; buckwheat, 10c. California, light amber sage, 11½-13c; white orange, 12½-14½c. Idaho, white sweet clover, 12-13c. Florida, white tupelo, few sales, 12-13c; light amber, 10-11c; Porto Rico, supplies, light, 90-95c per gal. Comb: Supplies moderate. Demand moderate, market slightly weaker. Sales to retailers, New York, 24-section cases white clover, fancy, $6.00-6.25; No. 1, $5.50-5.75; No. 2, $5.00-5.25; buckwheat, No. 1, $5.00. Beeswax: Since last report 60 cases France, 87 pkgs. Brazil, 28 pkgs. San Domingo arrived. Supplies light. Demand good, market firm. Sales to wholesalers, manufacturers and drug trade, West Indies, dark, 26-28c, mostly 27c. Africa, dark 29-30c. Cuba, dark, 26c. Chile, light, 31-33c. West Indies, light, 31c. Brazil light, 31-32c.

H. C. TAYLOR, Chief of Bureau.

Special Foreign Quotation.

LIVERPOOL.—There has been a firm market since our last report, 1465 barrels of Chilian honey having been sold in Liverpool at prices a little stiffer than our last quotation. The arrivals here have been 356 cases and barrels. In consequence of this increase and the rise in exchange, we make the value for extracted honey in American currency to be about 12c per lb. Beeswax has also been a little harder in price and its value in American currency works out about 36c per lb.

Liverpool, Eng., Nov. 6. Taylor & Co.

The A. I. Root Company's Report.

Since our last report we have received several small shipments of white clover comb, aggregating 521 cases, at $4.80, $4.50 and $4.25 and one hundred cases white clover comb at $4.50, $4.00 and $4.25 f. o. b. shipping points. Extracted honey receipts are as follows: 5 carloads sweet clover and alfalfa at 9c; one carload white clover local point, 10c; one carload white clover western point, 9c; one carload sweet clover and light amber extracted, 9c and 8½c; one carload sweet clover extracted, 8¾c; approximately 12,000 lbs. white clover in less than carload lots bought locally at 9½c per lb.; 1100 lbs. raspberry extracted at 9½c and 7½c, all prices f. o. b. shipping points.

"THE STORY OF THE SOIL."

This is a book that will put new life and hope into any country home that possesses it. Cyril G. Hopkins never wrote anything else so good or useful. Every farmer and his whole family should read it. We have only a few copies left for sale, and when these are gone we cannot offer this book again. First come, first served. Together with one year's subscription to Gleanings, only $2.00 postpaid. This makes this wonderful book cost you only $1.00. Address Gleanings in Bee Culture, Medina, Ohio.

You Can CUT COST on Labels and Circulars If You

Print Your Own

Cards, stationery, circulars, labels. Presses $12 up. Paper Cutters $3 up. Save money. Print for others, big profit. All easy, rules sent. Write for catalog presses, type paper, etc. THE PRESS CO., R-81, Meriden, Conn.

KITSELMAN FENCE

'Saved $16.40 on 80 Rods,' says T. G. Schumm, Willshire, Ohio. **You, too, can save** by buying direct at Lowest Factory Prices. **WE PAY THE FREIGHT.** Write today for Free 100-page Catalog of Farm, Poultry and Lawn Fence, Gates, Posts and Barbed Wire.
KITSELMAN BROS. Dept. 21 MUNCIE, IND.

Achord Bees and Queens for 1925

We want to place our 1925 price list in the hands of every progressive beekeeper. Worth your stamp whether you buy bees or not. Send a postal for your copy today.

W. D. ACHORD, Fitzpatrick, Ala.

PERSONAL STATIONERY
200 SHEETS and 100 ENVELOPES $.1.00

Printed with your Name and Address.

Clear, white bond paper, with envelopes to match. Your name and address printed in beautiful rich blue ink, on both paper and envelopes, and sent you postpaid for only $1.00. (West of Mississippi river and outside of U. S. $1.10.) If inconvenient to send the money, we will ship C. O. D. Money returned if you are not more than satisfied. Order today. Write name and address plainly.

AGENTS MAKE BIG MONEY taking orders for us. Write us today for our agent's proposition.
ELITE STATIONERY COMPANY
8012 Main Street. Smethport, Pa.

Root Quality Bees and Queens for 1925

We are preparing to fill early Queen and Bee orders beginning April 15. If you anticipate ordering package bees or queens for next spring delivery, we wish the opportunity of serving you. Prices will appear later.

THE A. I. ROOT COMPANY
MEDINA, OHIO.

SOUR HONEY DEPT.

Demuth, Root and Mel Pritchard:

First of all I guess I am goin to lay off the trail of Prof. R. B. WilLson of Ithaky University, N. Y. Its because of the awful mad letter he has writ our Gleanins editor tellin as how he knows a lot about me he can publish that will make me look worse and meaner than Mr. John G. Davis's poast eleckshun figgers. Praps Prof. WilLson writ to the man I bought my last coon dog of regardin my general reputashun for upstandiness. Any way, I aint got nothin agin Professor WilLson any more now, so I aint. But if I find later he aint really knowin anythin agin me and is bluffin me off I may change my mind, so I may. By that time some N. Y. state beekeeper as hasnt yet may write me some publishin material about Prof. WilLson as will make him pull his tail adown between his legs and beg for peace and more peace like my old coon dog, Old Gun, did years ago when he thought he wanted a mouse as was under a hive of black bees just when a sudden cold spell had stopped a smart honey flow. Old Gun changed his mind and atitude complete all to oncet. You never see a quicker change nowhere. I bet afore we are thru with this I'll be the bees, my reputation the mouse and Prof. WilLson will be Old Gun. He is goin to eat those words of hisn to Doc Phillips about my not knowin anythin about either fishin or beekeepin either one, so he is, and I ain't I dont think any more than a little agitated temporary by his awful letter as he writ to you, Mr. Demuth, telling as what he knows. But I agree to lay off his trail awhile till I am a little surer. If he will do the same and shut up and not distrack my attention and use up all my space next month I will get to tellin how Huber Root and Mel Pritchard transferred them bees.

I aint packed my bees yet, and while I took off all the clover honey yet they got some aster and fall flower honey left, and seein as how the first muskrats I've trapped this month aint heavy

Continued on next page

American Poultry Journal
Oldest, Largest and Best
3 MONTHS FREE
All ONE, TWO or FIVE year subscriptions received before Dec. 31st will be entered to commence with the January issue, and the Oct., Nov. and Dec. issues of this year will be mailed FREE. Order today and get them.
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THREE-POUND PACKAGE,
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MOULTRIE, GA.

Northern Beekeepers!

Attention!

Package Bees by Parcel Post Prepaid

(This includes Canada.)

Prices Low
Quality Best
Service Prompt

Write for price list and information.

A. J. HEARD
BONAIRE, GA.

Continued from page 809

furred I am agoin to callate on that sure season sign for a short open winter and not go to the bother of feedin and packin em. I never knew this muskrat sign to fail not oncet. So that fuss and bother is all saved. Coon huntin season opens in a few days now and I'll know what that new coon dog of mine is good for and I'll either have a comfortable winter and pay my debts or it'll be pretty skimpin with me. OLD DRONE.

P. S.—If Morris Dadant would shut up about his verticle wired foundation long enough to invite me to go duck huntin and continue shut up about it after I get there I wont say a word about Root's three-ply or what whoppin stories they tell me about it. It seems as if I aint heard anythin for months around Roots but three-ply and I am sick of it. I wake up nights hearin it, and I bet Morris finds hiself climbin verticle wires in his sleep and waking up his wife ayellin "no saggin," "brood to the top-bar," et ceterie. Duck huntin will cure this, Morris, and all I need is a cordjal invitatshun and a armistice on foundation. Have you a good duck huntin outfit complete what you can lend? I have a good shootin eye that I can bring along.

Bee Supply Bargains

NO. 2 OR "B" GRADE SECTIONS.

4¼x4¼x1⅞" Beeway, per 1000	$8.85
4¼x4¼x1½" Plain, per 1000	7.50
4 x5 x1⅜" Plain, per 1000	8.35

FRAMES.

Hoffman Self spacing Frames, reg., per 100	5.00
Shallow extracting frames, 5⅜", per 100	4.00
8-frame Excelsior covers, per crate of five	2.80
10-frame Excelsior covers, per crate of five	3.00
8-frame shallow extracting supers, with frames K. D., per crate of 5	3.50
10-frame shallow extracting supers, with frames K. D., 15⅞" wide, per crate of five	4.00
8-frame hives with Excelsior covers and frames complete K. D., per crate of five	10.00
Scalloped sect. holders 1⅞", per 100,	3.60
Plain sec. holders, 4x5x1⅞", per 100,	4.00

We are overstocked on the above items and are offering these prices for a limited time only.

Let us quote you on your supplies for 1925.

A. H. RUSCH & SON COMPANY
REEDSVILLE, WISCONSIN.

Root Quality Supplies

East St. Louis, Ill.

O. G. RAWSON, 3208 Forest Place.
Send for Catalog.

Authorized Distributor for St. Louis district.
BEES AND QUEENS.

GOLDEN QUEENS AND THREE-BANDED BEES FOR 1925

Untested queens, $1.00 each. Tested, $1.50 each. 2-lb. package of bees, $3.00; 3-lb. package of bees, $4.50; nucleus, $1.50 per frame. Additional pound of bees with nucleus, $1.00. No disease; safe arrival guaranteed; bees inspected; never had disease.
J. W. SHERMAN, VALDOSTA, GEORGIA.

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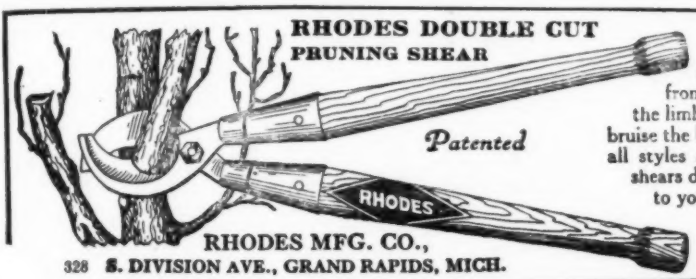

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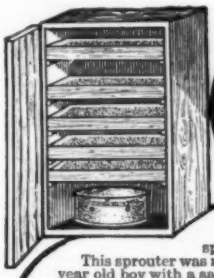

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GENERAL.

A

ADVERTISING
Honey 699
by Local Association.. 39
Honey in Local Newspapers 576
Honey in Theaters..... 39
Honey with Attractive Calendar 654
in Local Newspapers.. 718
Roadside 727
Value of Honey..... 583
with Old-fashioned Straw Skep 583
Alabama....37, 161, 237, 725
ALCOHOL FORMALIN SOLUTION..25, 230, 287, 716
Comb Submerged in.... 231
How to Use..... 230
Laboratory Tests with.. 396
AMERICAN FOUL BROOD 719
Be-Helth, Treatment of 365, 648
Chlorazene, Treatment of 364
Control of 364
Elimination of 757
Izal Treatment of..... 364
Killing Germs of..... 284
Mysteries of 362
Recurs in Treated Combs 584
Spread of 507
Treating Combs Affected with 156
ANTI-FREEZE SOLUTION 44, 642
Improved Methods of Preparing 642
Some Difficulties in Use of 713
Use and Preparation of 708
Ants Injurious to Bees... 596
Ants Cause Swarming Out 596
Ants Troublesome in Beehives 531
APIARY
and Hive Arrangement. 22
Arrangement of Work in 297
Eliminating Waste Motion in the..... 297
Established with Diseased Colonies..... 20
Type of, in Cotswold Region, England 710
Apiculture, Who's Who in 311
Arkansas 97, 378
Arizona 24, 162, 306
Arizona—Long Season in. 101
Asbestos for Packing Bees 799
Aster Honey for Winter.. 665
Bacillus larvae, Killing Spores of 284

B

Bank Exhibit of Bees and Honey 27
BEE
Behavior of, in Summer 441
Behavior of, in Winter 441
Cellar, Size of 667
Diseases, Control Legislation in New Jersey 773
Diseases, Studied by Government Apiarists 440
Explores Ear 665
Hunting in California.. 645
Hunting in Maine..... 596
Hunting, Pleasures of.. 653
Shipping Cage..... 224
Wisdom of 792
BEES
Black, Dispose of Drones 793
Can They Digest Any Kind of Sugar?..... 78
Can They Digest Starch? 77
Carniolan, Advantages of 103
Communicating Source of Nectar 30
Cross, Disposing of.... ..... 456, 525
Dead, Disposing of, in Winter 103
Dead, at Hive Entrances, How to Remove..... 107
Do Not Sleep..... 460
Do They Prefer Sweet Clover to Alfalfa? 173, 379
Examining, in the Spring 246
Exhibited in Chicago Bank 27
Flying During Snowstorm 165
How They Prepare for Winter 598
Hum of, in Cellar..... 103
Influenced by Deep Space Under Frames? 383
Injured by Spray Poison 247
Killing in Fall and Replacing in Spring... 90
Long Tongue, for Red Clover 459
Management of, in the Spring 155
Number of Needed in Hive for Wintering.. 663
on Old Homestead..... 437
Preparing for Honey Flow in California... 778
Quiescence of 460
Remove Flesh from Mice 664
Removing from Cellar.. 151
Restless in Cellar..... 104
Taking, from Chimney.. 518
Taking Out of Cellar Early 165
Temper of, When Working on Buckwheat and Alfalfa, resp..... 771
Two-pound Package of, Time Required to Build up.....171, 246
Use More Stores in Mild Weather 103
Value of in Fruit Pollination 290
Weight of ..... .43
Where to Locate..... 168
Bees, Men and Things.... ..... 44, 105, 173, 244, 532, 673, 733, 797
Beginners' Literature ... 41
Bixley, J. D. and His Apiaries 83
British Columbia..451, 594, 723
BROOD
Art of Spreading, the.. 84
Chamber, Intelligent Management of 84
Chamber, Temperature of 288
Combs, Discarding Imperfect 101
How to Equalize..... 289
Rearing, Beginning of, in Spring 246
Rearing, Cycle of Apis Florea 92
Rearing, Restriction of 383
Spreading, Proper Method of 85
Diseases and the Careless Beekeeper 388
Diseases, Cause of..... 170
Diseases, Observations and Experiences with 363
Diseases, Ravages of.. 646
Building up a Home Market 697
Building up Colonies in Winter 779
Building up for the Honey Flow 288
Buildings Located on Hillside, Advantages of.... 148
Bulletins on Beekeeping.. 442
Be-Helth, Action on Spores of Larvae 649
Beekeeper, Problem of, Same as Market Garket Gardener's 699
BEEKEEPERS
Association, a Live.... 773
Fine Spirit of 792
Help Inspectors 166
Picnic 443
Ready to Condemn New Discoveries 156
White Collar, Association of 225
BEEKEEPING
Basic Principles of, Same for All Localities... 651
for Ministers..... 525
Future, in Hands of Corporations or Small Beekeepers? 704
Government Work in... 440
in England 710-712
in Missouri, in the Early Days 435
in New Zealand..... 782
in Western Canada.... 456
Migratory, Laws Affecting 379
Migratory, on a Large Scale 767
Placing on Businesslike Basis 500
Some Reasons for Success or Failure in .. 650
Beemaster of Saramain Gulch 294

C

California 33, 95, 158, 233, 305, 374, 450, 520, 587, 657, 721, 722, 784
California Wild Buckwheat 770
Calvert, Howard R..... 535
Candy for Winter Stores. 727
Capping Melter, Steam Heated 526
Carniolan and Italian Bees, Comparison of 103
Cartons and Labels Help Honey Sales 730
Cataleptic Queens 24
Cellar Wintering, Hum of Bees in 103
Cellar Wintering, Causes of Loss in 171
Cell Building Colonies..359, 505
Celotex as Packing Material 729, 793
Chunk Honey, Producing, in Shallow Frames 382
Clover, Condition of..... 693
Clover, Sweet, Repels Grasshoppers 26

Comb Foundation, Weight of, for Sections..... 815
COMB HONEY
Fumigating 530
Healthfulness of 530
Individual, in Miniature Sections 146
More Profitable 782
Production of 78
Scraping Sections of... 531
Shortage of 694
Yield per Colony, Compared with Extracted 600
Commercial Honey Production 12
COMBS
Cost of Building from Foundation 171
Diseased, Saving of.... 25
Extracting Both Sides of, at Once..... 637
How to Protect Against Wax Moth 530, 601
Old Dark, for Brood-Spreading 85
Sterilizing Cheapened.. 86
Sterilizing Diseased.... 73
Consumption of Stores in Cellar 697
County Fair Made to Help Beekeeping 293
Conveyances for Honey.. 432
Co-operation, an Era of.. 227
Co-operation in Australia. 729
Co-operation, Interlocking. 150
Co-operation, Importance of 166
Corncobs for Smoker Fuel 239
Corn Syrup, Components of 77
Cream Separator Disturbs Bees 798
Cross Pollination, How Brought About 217

D

Dandelion Honey for Winter Stores 666
Dextrins in Honey and Honeydew 77
Dextrose, How Secured..77, 78
Diatose, Enzymes Forming 77, 78
Difficulties in Following Printed Instructions... 650
Digestion of the Honeybee 76-79
Disease in Treated Comb. 584
Diseased Comb, Bees Tearing Down 800
Diseases, Fighting 14
Disinfecting Extracting Equipment 458
Disinfection with Formaldehyde Gas 285
Dividing Colonies in Spring 315
Dividing in the Fall, in Texas 728
Doctor Becomes Beekeeper 292
Dr. Phillips, Bouquet for. 794
Double-walled Hives for Texas 718
Drone Comb, Influence in Supers 798
Dysentery, Cause of..... 79
Dysentery, How to Avoid in Cellar Wintering.... 696

E

Effect of Weather Conditions on Nectar Secretion 707
Effects of Variable Cellar Temperature 697
Eggs Laid by Queen, Not Hatched 799
Egg-laying Rate of the Queen Bee 428
Embargoes Affect Migratory Beekeeping 379
Entrance Closer for Packing Cases 728
Enzymes, Hydrolysis Through the Actions of 77
Equipment, Uniformity of 155
Eucalyptus, Species Known in California..... 771
Excluders, Use and Abuse of 372
Exhibit at Ohio State Fair 366
EXTRACTED HONEY
Handling Large Quantities of 148
Harvesting 500
Yield per Colony, Compared with Comb ... 600
Overcoming Prejudice Against 81
Up-to-the Minute Equipment for 500
Extracting Combs, Care of 530, 601
Extracting, Electric Power for 149
Extracting Plant, Central, ... 12, 148, 501
Extracting, Steam Equipment for 568

F

Fall Feeding, Syrup for.. 670
Falling Leaves 776
Famous Sources of Nectar, Facts and Fallacies Regarding 769
Fastening Foundation..13, 302
Father Lynch 435
Feed and Feeders..... 635
Feeder for Queen-rearing. 445
FEEDING
Bees in Cellar 800
Bees in Winter..... 43
Carrying Over Combs of Alfalfa Honey for.... 531
During Cold Weather.. 166
Fermented Honey 668
in Midwinter 104
Honeydew Honey 246
Methods 13
Unripe Honey in Fall.. 666
Stimulative, in Early Spring 246
Queens Before Introducing 526
When Introducing Queens 595
Fences, Right Side Up in Supers 383
Fermentation of Honey.. 447
Fertilization, Process of.. 144
Fighting Disease Beneficial 388
Finding the Queen..... 525
Finding Out What the Colonies Need 243
First Aid for the Beekeeper 596
First Colony, How Obtained 41
First Record of Actual Count of Eggs..... 428
Florida 162, 308, 454
Flowers, Destruction of Wayside 727
Foam on Honey, Cause of 601
Food Bees are Able to Digest 76
Food for Package Bees, Kind and Quantity of.. 224
FOOD CHAMBER
Completely Filled 379
Condemned 669
Full Depth Super for.. 667
Placed Above Comb-Honey Super 384
Removing, for Cellar Winternig 668
Supply Each Colony With 529
Use of 13, 165
Foundation Fastening ... 13
Formaldehyde and Bee Diseases 284
Formaldehyde, Uses of... 285
Formalin, How Made.... 284
Formalin Treatment for Foul Brood 365
Formalin Used 23 Years Ago for American Foul Brood 156
Foul Brood Stutz..... 21
Frames, Space Below, Advantages of 383

G

Georgia 163
Germacidal Action of Behelth on B. Larvae.... 648
Glucose, Commercial, Components of 77
Good Prices at Roadside.. 596
Government Work in Beekeeping 440
Granulated Honey, Reducing to Creamy Consistency 713
Granulation, Prevention of 600, 666
Grasshoppers and Sweet Clover 26
Great Progress of Recent Years 12
Growth of Bee Larvae Attributed to Pollen 215

H

Harvesting and Extracting 500
Harvesting Extracted Honey 528
Hawaiian Algarroba 772
Heating the Honey Room 148
Helping Weak Colonies... 289
HIVE
Entrance Keeping Free from Dead Bees.. .. 107
How to Open 242
Odor, in the Fall..... 667
Records, Keeping on Covers 152
Records, System of 22
Seat, No Time to Use.. 152
Double-walled for Texas 718
Double-walled, in Building 799
Made of Yellow Pine.. 170
Standardization of 155
Hiving a Swarm with Established Colony 458
Hiving Swarms 386
Hodgson Extractor 637
Holds Office of Bee Inspector Without Pay..... 436
Honeybees Increase Set of Fruit 290
HONEY
Adventures in Selling.. 697
Advertising 699
Advertising with Attractive Calendar 654
and Bee Exhibit in Bank 27
Artificial? 42
Aster, Character of.... 584
Aster, for Winter Stores 667
Becomes Cloudy on Melting 103
Best Way to Take Off.. 463
by Parcel Post....516, 663
Causes of Fermentation of 447
Clarifying When Bottling 800
Creating Demand for.. 514
Dandelion, for Winter Stores 666
Dark, Good Use for.... 171
Directions for Boiling.. 314
Exhibits at State and County Fairs 575
Extracted, Amount to Charge for 530

Extracted and Comb, Yield, resp., per Colony 600
Extracted, Overcoming Prejudice Against .. 81
Fermented in the Combs, Useful for Brood-rearing 171
Fermentation of, in Winter 103
From Melted Cappings, Waxy Taste of..... 530
for Automobile Radiators 642, 708, 710
Grading Law, Wisconsin 580
Greater Demand for... 715
Handling in Most Efficient Manner 431
Heating for Bottling .. 798
How to Increase Consumption of 715
in Extracts 663
in Miniature Sections.. 145
Knife, Steam-heated .. 28
New Way of Treating.. 713
Not Perfect Anti-freeze. 713
Produced Locally Preferred 580
Producing by Machinery 763
Production, Commercial 12
Production in Hawaii.. 772
Production in Montana 379
Production in the South, Prospects Brighter for 166
Quality of Unsealed... 460
Ripening, Artificially... 668
Sales Increased by Attractive Labels 730
Salesmen, Not Many Working at the Job.. 80
Selling Direct to Consumers 80
Selling in City Markets 698
Selling in Milk Bottles. 728
Selling Locally 695
Shipping by Parcel Post 793
Sold by Distributing Recipes 101
Storing and Marketing. 528
Taking from Back Shelf 573
Uniform Prices of..... 758
Use of in Bread Making 525, 663
Vinegar, Purpose of Yeast in 531
Who Should Sell?....80-81
Yield in U. S..... 45
Honeycomb, Architecture of 777
Honey Crop, How to Increase 84
Honey Crop, How to Sell. 574
HONEY FLOW
Early, in Louisiana.... 240
Extent of Influence on Queen-rearing 762
in the Tropics..... 90
How to Tell When Closing 461
Honey Mask for the Complexion 727
Honey Markets 4, 68, 132, 204, 276, 348, 420, 492, 560, 624, 688, 752
Honey Plants, Adventures with 769
Honey-producing Plant, "Best Equipped in the World" 767
HONEY SOLUTION
as an Anti-freeze, Advantages of 644
for Radiators 160
for Radiators, How Improved 642
Should be Sold Ready for Use 644
Honey Tea Shop 583
Hospital Yards, Advantages of 86
House Apiaries, Advantages of 792
How Bees Tell Source of Nectar 30
How Bees Keep Warm in Winter 106
Hutzelman's Solution..25, 365
Hutzelman's Solution, Impracticability of Beekeeper Making up..... 88
Hutzelman's Solution, Sterilizing Combs With 716
HUTZELMAN TREATMENT
Economy of 86
How Small Beekeeper Can Apply 88
in Brief 87
on a Large Scale..... 87
Hydrolysis, Breaking up Sugar Compounds by.. 77

I

Idaho 160, 307, 593, 722
Immunity to Bee-stings... 43
Importance of Extracting as Clean as Possible... 639
Importance of Good Queens 288
Improvement in Combs... 12
Improvement in Extractors 12
Improvements in Treating Brood Diseases 239
Increase, Making, at Close of Honey Flow..... 459
Increase, Prevention of.. 383
Increasing 50 colonies to 300 in a Single Season 220
Indiana 37, 236, 308, 523, 589, 789
Inducing Bees to Cluster in Convenient Place.... 314
Inexpensive Advertising.. 713
Inspector Who is a Teacher 292
Introducing Cage with Notched Stopper 448
Introducing in Two Stories 448
Introducing Queens..446, 595
Introducing Queens at Entrance 458
Introducing Queen Cells.. 437
Introducing, Water Method of 371
Iowa 96, 452, 589, 785
Italian Bees in Brazil.... 780
Just News 45, 108, 172, 246, 316, 464, 597, 672, 732, 796

K

Koehnen Bros. Honey Plant 765
Knife, Steam-heated 28

L

Lack of Stores Great Danger 312
Land of Milk and Honey.. 571
Land of Promise.....14-17
Land of Promise—Why?.. 15
Language of Bees..... 30
Large Sale Honey Production 765
Larvae, Activities of 356
Larval Food, How Supplied 356
Learning and Unlearning.. .22-23, 84-86, 151, 219 297, 363, 431, 510, 571, 650
Lessons from Poor Seasons 707
Lighting Smoker 455
Literature for Beginners.. 41
Live Organization in Wyoming 717
Loading Combs Wrong Way 596, 665
Local Beekeepers' Associations, Value of..... 757
Local Editor Writes Up Honey 663
Locality, Differences in.. 90
Localization of Queen-rearing 760
Location, Mistake in Choosing 511
Locations for Apiaries.... 41
Long-tongued Bees 459
Loss of Bees in Flight... 573
Louisiana 163, 307

M

Making Increase Becomes a Fine Art 219
Making Increase, Previous to Honey Flow..... 219
Making Increase, Simple Method for 219
Making Spacers Wider... 455
Maltose, How Obtained.. 77
Mammoth Uncapping Can 569
Management of Supers... 387
Management of Supers as Close of Season Approaches 462
Management of Supers During Fall Honey Flow 598
Mangrove, the 770
Manitoba ..36, 307, 658, 787
Market Conditions, Improvement in 582
Marketing Problem, How to Solve 512
Mating of Queens, Possibilities of, Controlled.. 517
Melezitose, Found in Honeydew 77
Michigan 98, 160, 376, 451, 522, 588, 660, 788
Migratory Beekeeping in California 294
Miller Memorial Library Donations 45
Minnesota 99, 235, 453, 593, 724
Microscope to Distinguish Bee Diseases..... 798
Mistakes, How to Avoid.. 510
Modern Beehive 168
Moe's Beekeeping System 22
Moisture at Entrance.... 171
Moisture Condensed in Hive 42
Moisture Within Hive in Cellar 170
Moisture Within the Beehive 17-20
Montana 522, 786
Morrison, Sylvius John... 645
Moving Bees from Cellar. 154
Moving Bees Short Distance 104
Moving Bees in Box Hives 295

N

Nailing Frames 455
National Honey Week.665, 693
Nectar Secretion, Factors Influencing 707
Next Year's Honey Crop.. 528
New Jersey Beekeepers' Association, Accomplishments of 773
New Scramble for Gold.. 360
New Winter Case..... 652
New York..98, 159, 377, 450, 523, 590, 661, 725, 789
North Carolina 97, 237, 375, 590
North Dakota's Dark Side 15
Northern Beekeeper Goes South 229
Novel Advertising Stunt.. 366
Nuclei, Building up After Honey Flow 530
Number of Bees in Hive. 42
Number of Colonies for the Beginner 168

O

One-man Outfit, Advantages of 706

Ontario 38, 100, 164, 238, 310, 378, 453, 524, 591, 662, 725, 790
Oregon 234, 377, 521, 658

P

Pacific Coast Beekeepers, Some..20, 82, 149, 224, 292, 360, 434, 512, 576, 645
Package-bee Industry, Influence of, on Queen-rearing 762
Package Bees, Advantages of 228
Package Bees or Wintering 90
Package Bees, Transferring to Hive..... 229
Package, 2-lb. of bees, Time Required to Build up 171, 246
Packages for Winter.... 779
Packed and Unpacked Hives, Consumption of Stores in 702, 703
Packing Colonies in Group for Out-door Wintering. 91
Packing, Effect of on Food Used by Bees..... 700
Packing in Quadruple Cases 634
Packing Material, New... ..... 798, 799
Painting Hives with Bees in Them 601
Parcel Post Packages for Honey 730
Peculiar Habits of the Smallest of the Honey Makers 92
Peterson, A. J. 704
Pettit Uncapping Knife.. 502
Pioneer Work Benefits Others 150
Pleasures of Bee Hunting 653
Poisoning, Peculiar Case of 369
POLLEN
A Remarkable Food ... 217
and Hay Fever..... 218
Carried From Flower to Flower 143
Feeding Bees Substitutes for 215
Grains, Covering of ... 143
Influence of, Upon Digestion 216
Lavish Production of.. 142
Life of, Exceedingly Short 217
Produces Chemical Change in Sugar.... 216
Solving Mysteries of... 215
Some of the Wonders of 140
Use of in Brood-rearing 218
Porto Rico 309, 592
Precautions When Using Honey Solution 643
Preventing Air Bubbles When Bottling Honey. 666
Prevention of Increase.303, 380
Preparing Comb Honey Supers 300
Preventing Loss of Queen-cells 437
Principles and Rules, Difference Between 650
Producing Manzanita Honey 572
Production, Cost of..... 166
Propaganda in Local Newspapers Needed 697
Progress of Recent Years 12, 14
Prospects in Argentine Republic 101
Protecting Bees in Sweden 165
Protection from Wind.... 636
Purchasing Bees in Box Hives 294
Purchasing Colonies in February 107

Q

Quality of Winter Stoes.. 670
Quadruple Winter Cases Compared with Single. 633
QUEEN
Crowded by Honey..15, 459
Device for Catching... 525
Egg-laying, Rate of... 428
Excluders for Comb Honey 384
Excluders, Purpose of. 296
Influence on Workers.. 380
Killing Old 382
Lost in Swarming.... 382
Mating Boxes 579
Mating Yard 578
Natural Span of Life of 531
Stinging Herself on Foot 24
Queen-cell Cups, Size of.. 526
Queen-cells, Introduction of 437
Queen-cells, Transferring. 460
Queen-cells, Using Second Time 382
Queenless Colonies and Worthless Queens..... 289
QUEEN-REARING
Few Recent Improvements in 764
in England 504
Localization of 760
on Small Scale 358
QUEENS
Cataleptic 24
Breeding for Small Beekeepers 315
by Aeroplane 664
Color of 458
Controlled Mating of.. 517
Delayed in Mails..... 303
Introducing 446, 531
Introducing by Water Method 371
Pure-bred Remain Pure 600
Rearing in Lower Story 530
Where Reared in the Future 763
Virgin, Several in Hive at One Time..... 458
Wings, Best Time to Clip 312
Wings, Clipping with Pocketknife 380

R

Races of Bees in Scotland 595
Radio Increases Honey Sales 575
Rapid Work in the Apiary 151
Ravages of Brood Diseases 646
Rearing Queens by the Thousand 576
Record System, Moe's... 23
Red Clover Bees..... 459
Removing Bees from Combs 433
Removing Larvae Dead from American Foul Brood 104
Rendering Wax 665
Requeening Every Year.. 43
Requeening, in August... 529
Requeening Methods 13
Requeening Without Dequeening 460, 601
Retired Business Man Takes up Beekeeping.. 224
Roadside Honey Selling.. 575
Robber Bees, How to Detect 463
Robbing Spreading Foul Brood 42
Rust on Honey Containers 798

S

Sacbrood, Appearance of. 531
Sagebrush in California.. 770
Scale Colony, Keeping Records of 708
Scottish Beekeeping 729
Second-hand Cans, Other Uses for 214
Second-hand Honey Cans, Made into Tanks for Treating Diseased Combs 212
Sections, One-piece, Origin of 145
Securing Surplus from Manzanita 240
Selecting Good Colonies.. 42
Selling Direct to Consumers 80
Selling Honey, Propaganda Needed in 697
Selling the Honey Crop.. 574
Series of Contests Creates Interest 443
Seventh Int. Apicultural Congress 757
Shaking Off All the Bees 434
Shipping Comb Honey... 668
Shipping Combless Packages 220
Shortage of Moisture in the West 240
Sidehill for Honey-house 298
Siftings 32, 94, 157, 232, 304, 373, 449, 519, 586, 656, 720, 783
Size of Cluster Needed for Winter 669
Small Objects Attached to Bees' Feet 667
Smoker Conveniences.... 595
Smothering Bees When Moving 510
Sodium Hypochlorite Treatment 648
Sorting Out Unfinished Honey 462
Some Pacific Coast Beekeepers 82, 84, 149, 224, 292, 360, 434, 512, 576, 645, 704
Some Principles of Wintering 696
Sour Honey Dept.677, 743, 809
South Dakota, Possibilities of Beekeeping in.. 716
Speeding up Slow Colonies 455
Spread of American Foul Brood 507
Spread of Brood Diseases 389
Spreading the Brood.... 289
Spreading Hives Apart When Unpacking..... 314
Spring Brood-rearing, Beginning of 246
Spring Brood-rearing, Number of Combs Required for 247, 314
Standard Eight-frame Brood-chamber 170
Standardization of Manipulations 14
Star Thistle Makes New Beekeeping Region 646
Starch, Can Bees Digest? 77
Starch in Alimentary Tract of Bees 79
Starch Indigestible to Bees 302
Starch, Relation to Sugar 77
Steam Equipment for Extracting 568
Steam-heated Honey Knife 28
Sterilizing and Patching Combs 384
Sterilizing Apparatus, Homemade 212
Sterilizing Combs Cheapened 86
Sterilizing Combs Containing Cells of Granulated Honey 315
Sterilizing Combs in European Foul Brood..... 43
Sterilizing Outfit, Homemade 212
Sterilizing the Combs.... 389

Stone Marker System.... 22
Stores, Abundance of, Important 289
Stores, Amount Consumed During Winter 800
Stores, Consumption of, in Winter 666
Stores Required for Outdoor Wintering 700
Story of Modern Transferring 294
Successful Outdoor Wintering 632
Sugar, Can Bees Digest Any Kind of?..... 78
Sugar, Different Kinds of 76
Supplying Bees with Water 246
Supers, Removing in Winter 799
SWARM CONTROL
Demaree Plan for..... 368
More Radical Methods of, Not Practiced.... 368
Various Plans for..... 368
SWARM
Prevention in Outyards 370
Returns to Its Hive... 383
With Clipped Queen... 314
SWARMING
Effected by Age of Queen 459
in Outyards, How to Prevent 370
Indications of 384
How Bees Prepare for. 385
Problem 313
Propensity of Apis Indica 455
SWARMS
Cluster Before Leaving 384
Newly Hived Swarm Out 382
Prime, Swarm Again the Same Season 600
Uniting Two or More.. 382
SWEET CLOVER
Immune to Grasshopper Attacks 26
in South Dakota 716
Preferred by Bees to Alfalfa? 173, 379
Story, a 791
Syrup for Fall Feeding, How Made 670
Syrup, How to Prevent Souring of 104

T

Taking Honey from Back Shelf 573
Talks to Beginners..... .....41, 106, 168, 242, 312, 385, 461, 528, 598
Testing the Honeybee's Digestion 78
Texas 34, 161, 234, 306, 376, 521, 659, 787
Tiny East Indian Honeybee 92
Tools of the Apiarist.... 23
Tornado Victims Receive Aid 794
Transferring in Fall..... 600
Transferring to Jumbo Hives 247
Trehalose, Bees Able to Digest 78
Tulip Tree as Nectar Yielder 247

U

Uncapping and Uncapping Knives 298
Uncapping Machine 641
Uncle Sam's Bee Culture Office 440
Uniting Two or More Swarms 382
Unspaced Frames, Handling 152
Utah 35, 374, 592, 722
Utilizing Swarming Colonies to Strengthen Others 290

V

Vancouver, Mild Winters in 794
Vanilla, Orange Blossoms and Bees 663

W

Water Absorbed by Honey 19
Water Expelled from Hives 18
Water Gathered by Bees. 17
WAX
Deposits at Nehalem... 39
Moth, Protecting Combs Against 530, 601
on Bottom-boards, in Winter 247
Rendering 665
What to Look for in a Comb of Brood..... 242
What to Use in the New Hive 386
Wheelbarrow 433
When to Give First Super 313
When to Give Second Story 312
Wholesale Swarming Out. 511
Who Should Sell Honey? 80
Who's Who in Apiculture 311
Why Bees Destroy or Accept Cells 439
Wild Buckwheat in California 770
Willow Tree, Peculiarities of the 240
Window Display of Honey 27
Window Displays, Value of 80
WINTER
Case, a New.....652, 791
Consumption of Stores 700, 703
Entrance 693
Feeding 43
Flights, Value of..... 106
Losses, Causes of...240, 667
Preparations for 694
Protection 667, 671
Repository Above Ground 666
Stores, Abundance of, Important 670
Stores, Compact 794
WINTERING
Bees in Kansas 700
Causes of Loss in Cellar 171
in South Dakota 91
in Two Stories..... 799
One Colony Above Another 666
Problem 669
Some Principles of.... 696
Successfully Outdors... 632
Weak Colonies 800
Wisconsin 35, 236, 523, 660, 724
Wisconsin Beekeepers' Express Appreciation..... 664
Wisconsin Honey Grading Law 580
Wyoming 659, 785

Y

Yeast in Honey Vinegar. 531
Young Bees for Winter... 632

EDITORIALS

Alcohol Formalin Solution for American Foul Brood 138
Alcohol Formalin Solution, Reports on 630
Alfalfa Yields Only in West 735
Another Slanderer of Honey 283
Associations Fight Brood Diseases 210
Beekeeping and Bookeeping 10
Beekeeping Governor..... 566
Bee Stories in Popular Magazines 354
Buckwheat Yields During Afternoon 629
Building Up the Colonies 282
Brood-rearing in Winter. 758
Cause of Blisters on Painted Hives 735
Cause of Difference in Color of Honey..... 11
Comb Honey, Shall We Produce More? 73
Comb Honey, Where Needed 209
Confusion Regarding Two-story Hives 10
Crop and Market Conditions 565
Dr. Brady's Apology.... 425
Dr. Phillips to Begin New Work 425
Effect of Cool Wet Weather in May 426
Effect of Size of Winter Chamber 734
Eradicating American Foul Brood 353
Exhibits at Fairs..... 498
Experiments in Cellar Wintering 282
Feeding Unsealed Honey Back to Bees..... 736
Food Chamber, Again.... 498
Food Chamber to Correct Quality of Stores..... 736
Freak Legislation 137
Hambleton Appointed Apiculturist 565
Honey Below Cluster in Winter 734
Honey from Diseased Colonies Safe for Human Use 735
Honey in Automobile Radiators 139
Honey, Crop, Foundation of Next Year's..... 499
Honey Knife, Straight Handle 138
Honey, Popular Ideas Concerning 209
Honey Prices, Trend of.. 74
Honey Slogan Wanted... 282
Honey Quotations in Newspapers 498
Honey, Use of in Making Bread 354
Ignorance Regarding Honey 566
Inducing Bees to Work With Great Spirit..... 427
Important Work on Disinfectants 353
International Apicultural Congress 281
Keeping Colony Records.. 11
League Meeting at Chicago 9
League Meeting, The.... 137
Lectures on Bees and Honey 565
Lock the Door Before the Horse is Stolen..... 9
Meeting at Quebec...498, 629
Moisture Given Off by Bees 734
Moving Bees a Short Distance 736
New Bulletin for Beekeepers 281
On to Quebec in Septem-

ber 353
One of the Old Masters.. 630
Planning for Next Season 354
Preparing Bees for Winter 629
Preventing Crystallization in Sugar Syrup..... 630
Queen-excluders, Use of.. 355
Quiescence of Winter.... 759
Shall We Requeen Annually? 499
Shipment of Bees on Combs 281
Shipping Nuclei into Canada Prohibited 219
Shortage of Moisture in the West 209
Sterilizing Combs on a Small Scale 9
Sterilizing Diseased Combs 73, 211
Stagnation of Colony Activity 567
Sugar or Molasses Not Suitable for Automobile Radiators 138
Sweet Clover Renews Old Orchard Soil 9
Taking Away Honey and Feeding Sugar for Winter 735
Transferring Bees in Fall. 736
Uniform Prices for Honey 758
What Will the Harvest Be? 497
When Doctors Disagree.. 631
When Feeding Stimulates Brood-rearing 736
Winter Stores, Shortage of 137
Wintering Bees in a Vacant House 735
Wisconsin Meeting 497
Wool Waste for Winter Packing 735
Work in Outer Portions of Super 566

CONTRIBUTORS.

Adams, C. D. 26, 580
Alexander, Joe 583
Anderson, John 302
Anderson, T. M. 716
Andrews L. L. 33, 95, 158, 233, 305, 374, 450, 520, 587, 657, 721, 784
Arant, W. L. 39
Atwater, E. F. 26, 160, 307, 368, 445, 526, 593, 723
Baker, Geo. W. 165
Barber, O. E. 717
Barr, Joseph M. 229, 379, 652, 793, 794
Bartholomew, C. E. ..162, 308
Bartlett, Ira D. ..98, 451, 588
Baumbach, C. H. J. 663
Bell, W. L. 371
Bischoff, J. A. 595
Bowen, A. H. 504, 710
Brown, H. H. 665
Burr, Leslie 22, 84, 91, 151, 219, 239, 297, 363, 431, 510, 571, 650, 665, 697, 769
Byer, J. L. 38, 100, 148, 164, 230, 238, 239, 310, 378, 454, 524, 585, 591, 662, 726, 790
Calvert, J. T. 535
Cameron, I. W. 91, 518
Carr, E. G. 665, 773
Cleeves, Edw. W. 302
Cook, Charles 664
Corkins, C. L. ..659, 718, 785
Crane, J. E. 32, 94, 157, 232, 288, 304, 373, 419, 519, 586, 707, 720, 729, 776, 783
Crowl, E. D. 779
Cutts, J. M. 38, 161, 237, 725
Danielson, Danici....166, 239
Davis, E. C. 163, 240, 307
Deimer, R. 30
Deschamps, W. S. 101
Devell, M. J. 154, 221
Eckert, J. E. 596
Eldred, M. G. 727
Ellis, J. M. 595, 730
Engle, C. S. 156
Faulhaber, F. V. 719
Ferguson, C. A. G. 455
Findlay, W. M. 453
Fisbeck, J. H. 791
Floyd, L. T. 37, 307, 380, 658, 787
Flynn, Wm. F. 663
Fox, R. N. 596
Fracker, S. B. 507
French, Mrs. Lillian J... 727
Garner, Dr. E. C. 665
Gehrels, A. W. 728
Gilbert, A. C. 101, 380, 455, 595, 730, 794
Gilbert, Geo. 456, 792
Gill, M. A. 101, 380, 455, 595, 730, 794
Green, J. A. 155, 708
Griesenauer, G. J. 455
Griffin, O. B. 716
Gwin, C. M. 664
Hadsell, B. H. 101
Harner, L. S. 719
Hassinger, Ed., Jr. 39, 523, 724
Hederick, L. J. 240
Hill, Frank 729
Hillman, J. 713
Hogg, John C. 380
Hograve, Henry 165
Holtermann, R. F. 30, 447
Huey, Chas. H. 166
Hugh, Bevan L. 794
Hutson, Ray 290
Jager, Francis 235, 453, 574, 593, 696, 724
Johnson, T. C. 166
Joiner, M. S. 653
Jones, Dan 364
Kautz, Harry C. 446
Kelty, R. H. 160, 376, 522, 642, 660, 789
Kyte, E. G. 525
Laird, Paul 448
Latham, Allen 714
La Rocque, A. P. 379
Leach, L. T. 779
Lenning, E. H. 165
Lesser, F. W. 782
Lineburg, Bruce 24, 356
Livingston, T. W. 163
Macdonald, R. H. 93
Martin, W. J. 97, 237, 375, 590
Meineke, Ellsworth A..28, 228
McGuire, G. W. 303
Merrill, J. H. 700, 791
Miller, E. S. 236, 523, 789
Miller, Hiram 165
Miller, N. E. 379
Miller, W. H. 303, 525
Mitchell, Ed 794
Moore, Chas. 793
Moore, F. B. 573
Murry, H. D. 584
Muth, George 663
Myers, H. M. 98, 377, 523, 661, 790
Nolan, W. J. 428, 760
Oplinger, Merritt 728
Ormond, J. V. 97, 378
Paddock, F. B. 239
Pangburn, W. S..452, 589, 786
Pankiw, Nicholas 456
Parks, H. B. 35, 161, 234, 306, 376, 521, 659, 788
Pearson, C. L. N. 730
Peirce, E. W. 663
Peterson, J. W. 448
Pettit, Morley 12, 500
Phillips, E. F. 17, 76, 140, 215
Rea, Geo. H. 596
Rexford, O. P. 727
Richter, M. C. 34, 95, 159, 234, 305, 520, 587, 657, 722, 785
Riggs, Timberlin 369
Rodriguez, Francis 525
Root, E. R. 14, 86, 145, 212, 366, 516
Root, H. H. 637, 664
Running, David 526
Saunders, C. B. 526
Schallard, Major 372
Schenk, Emilio 781
Schuman, H. W. 596
Schmidt, A. H. 793
Scribner, Lloyd E. 596
Scullen, H. A. 234, 377, 521, 658
Sheppard, W. J. 452, 594, 724
Sippel, O. A. 379, 522, 787
Small, A. V. 370
Smith, Jay 37, 80, 308, 358, 437, 517, 589, 664
Snyder, Penn G. 309, 592
Snyder, R. A. 454
Southwick, A. M. 525
Staysel, Oskar 166
Stiles, Dr. E. P. 718
Stuart, Dora 20, 82, 149, 224, 292, 360, 434, 512, 576, 704, 765
Thompson, M. R. 99, 280
Townsend, E. D. 294
Unsworth, John 782
Urban, Carrie T. 101
Vorhies, Chas. T..34, 162, 306
Wallace, W. B. 778
Watson, Albert W. 229
Webb, L. E. 595
White, Dr. G. F. 284
White, Frank M. 166
Wilson, H. F. 36, 236, 648, 660, 665
Wilson, W. L. 596
Willson, R. B. 159, 443, 450, 590, 725
Winkler, Edw. A. 654
Wooster, E. W. 90
Wright, C. E. 525
Young, Mrs. C. A. 726

ILLUSTRATIONS.

Angle B of the Cell..... 777
Apiaries of A. H. Bowen.. 711
Apiaries, A. I. Root Co.. 102
APIARY
.....February cover
.....April cover
.....October cover
A Corner of Miss Jakeman's 711
Adams & Myers, N. Y.. 40
Box Hive and Straw Skep 518
California 167
During Honey Flow, P. C. Tweedie's..... 711
Hartman's California.. 226
Harvest Time..August cover
in California 578
in Clover in Wisconsin 792
in Missouri 436
in Single Winter Case.. 636

in Summer..September cover
in Winter....January cover
in Winter 153
in Winter 227
Like and Eldridge 381
Located in Orchard.... 151
North Dakota 16, 17
of E. G. Beale-Browne. 710
of C. Castle..... 712
of J. D. Bixley, near Covina, Calif..... 83
of M. G. Eldred on Main Highway near Chicago 792
J. W. Powell's 299
Morley Pettit's 633
R. V. Cox..... 381
Robert Williams 362
Apple Blossoms 291
Arrangement of Brood and Combs 85
Bacillus Larvae.....364, 365
Bacillus Larvae, Growing Stages of 284, 286
Barn Used as Advertising Billboard 575
Bee and Honey at Ohio State Fair 366-367
Bee Shipping Cage..... 221, 222, 223
Beehives, Scandinavian... 31
Beekeepers at Harold Hornors' Apiary 775
Beekeepers in Brazil Bringing Queens to be Mated, to the Dept. of Agriculture 781
Beekeeping in Australia.. 527
Bees Packed in Tar Paper Winter Cases 793
Bees Spilled from a Truck 367
Bixby, J. D., Wife and Daughter 82
Borton, O. G., Scotland, N. Dak. 15
Burr, Leslie 572
Calendar Advertising Honey 655
Calkins, Ralph B..... 513
Calvert, Howard R..... 535
Capping Melter 526
Charlock in Bloom..... 506
Colonies Packed for Winter 671
Comb Containing American Foul Brood..... 456
Comb of American Foul Brood in Advanced Stage 87
Comb of apis florea...92, 93
Comb, Sterilized, with Healthy Brood 457
Combs Uncapped with New Knife 29
Cotswold Village Bee Mistress 712
Cutting Foundation 301
Dampening Sections Before Folding 300
Disinfecting Combs with Hutzelman Solution..88, 89
Dr. T. J. Headlee, Harold Hornor and Geo. S. Demuth 775
Double-walled Hive 671
Entrance Closer for Severe Weather 728
Exhibit in Bank Window 27
Edson, Elmer 577
Extracting Crew at Ohio State Fair 367
Extracting House ...167, 381
Extracting House, Work Shop and Bee Cellar.. 568
Extracting Outfit.....570-571
Extracting Plant 148
Extracting Room 381
Extracting Super 501
Extractors, Old Style.... 637
Fastening Foundation in Sections 301
Feeder for Queen-rearing. 445
First Italian Queens at the Government Apiary in Brazil 780
Flat Base Between the Cells 778
Formaldehyde Gas Generator 286
Frame Wiring Device.... 647
Garage and Honey-house Combined (A. J. Peterson's) 706
General View of the Model Apiary of the Government of Brazil 781
Gov. Donahey at the Ohio State Beekeepers' Field Meet 731
Grading Honey for Carload Shipments 766
Group of Beekeepers at New Jersey Field Meet 774
Hambleton, James I..... 597
Hartman, Cary W..... 225
Hexagonal Prism With One of the Rhombs of a Cell 777
Hive, Containing Three Colonies 361
Hive on Scales 569
Hive Records 22
Hive Packed for Outdoor Wintering 91
Hodgson, A. F. and J. W. 639
Hodgson's Extracting Plant 639
R. F. Holtermann's Helpers 28
Honeybee Larvae....356, 357
Honey Crop Secured by J. Tissot 730
Honey Exhibit at Quebec, Canada 795
Honey Exhibit Case..... 576
Honey in Miniature Sections 147
Honey Knife, New Steam-heated 29
Honey Warehouse of Koehnen Bros. 767
Introducing Cage..... 446, 448, 647
Italian Bees at the Dept. of Agriculture, Brazil, Ready for Shipment... 780
Koehnen Bros., Truck and Trailer Loaded with Honey 769
Koehnen Bros. Truck Loaded with 5-lb. Pails 768
Liquefying Tank Located Out of Doors..... 768
Live Bees at Fairs..... 293
Making Bottom-boards from old Shade Boards 766
Modern Hive 169
Morrison, S. J., Advertises Honey 646
Moving Bees by Truck.. 225
New Winter Case, Details of 791
Nuclei Used for Mating Queens in the Model Apiary of the Government of Brazil..... 781
Oak Bloom.....May cover
Octagon Wood and Straw Hive, Old-fashioned.... 711
Old Hives 509
Packing Bees in Quadruple Cases 729
Paper Rim Used by Geo. J. Griesenauer for Packing Hive 728
Parcel Post Package.... 516
Pasturage, South Dakota. 16
Peterson's, A. J. Bee Shed 705
Phillips, E. F..... 440
Pollen Grains, Types of.. ..... 141, 142, 143
Quadruple Winter Case.. ..... 634, 635
Queen-cells 505
Queen-mating Yard 578
Queen-rearing Appliances. 505
Queen-rearing Nucleus with Feeder 438
Roadside Honey Shop... 575
Roadside Sign, an Attractive 727
Root, A. I.....46, 109, 174, 248, 317, 390, 465, 674
Root, A. I., and H. D. Hughes 249
Root, A. I., at a Beekeepers' Meeting in Michigan 48
Scotch Hive 293
Second-hand Honey Cans Made into Tanks for Treating Diseased Combs 212, 213, 214
Selecting Breeding Queen 579
Signs, Roadside.....40, 81
Small Truck 641
Smoker Conveniences ... 595
Smoker Lighting Contest. 443
Steam Boiler 569
Sting in Foot of Bee.... 24
Stratton, Robert W..... 240
Straw Skep.....241, 583
Stutz, Joe, Chico, Calif.. 21
Swarm.....June cover
Swarm.....July cover
Sweet Clover and Alfalfa Hog Pasture, S. D..... 15
Sweet Clover Pasturage, N. D. 15
Sweet Clover Pasturage S. D. 16
Tank in Position for Disinfecting Combs.... 88, 89
The Three Rhombs Which Form the Base of the Cell 777
Two Champion Colonies.. 239
Uncapping Can 570, 571
Uncapping Machine..... 641
Vertical Honey Extractor. 640
Virgin Queens in Incubating Cage 506
Wasp Trap 711
Webster, W. L. 16
Willow Bloom....March cover
Windbreak....November cover
Winter Case 652
Winter Case Made of Roofing Paper 730
What Would You Do Contest 444
Work Shop, Hodgson's... 638

A. I. ROOT'S STORY.

A. I. Root's Story of His Own Life.....46, 109, 174, 248, 317, 390, 465, 533, 602, 674, 743, 801
An Early Romance..... 46
Another Runaway Swarm 249
Burdens of a Growing Business 802
Careless Correspondents.. 318
Carelessness in Making Out Orders 739
Cutting the Bee-tree and Transferring the Bees. 250
Difficulties of a Growing Business 738
Difficulties in Making Ends Meet 801
Duffey's Malt Whiskey.. 603

Electricity, Wonders of.. 787
Electropoise and Oxydonor Fraud 676
False Weather Prophets.. 602
First Year Not Profitable in Dollars and Cents.. 176
Frauds in Patent Medicine 675
Fraudulent Advertisers... 533
Fraudulent Bee and Queen Breeders 466
Gleanings Ruled Out of the Mails 891
Interest in Electricity... 47
Large Amount of Honey Used in Rearing Brood 175
Many Careless Customers 802
Queen-rearing, First Attempt at 176
Remarkable Queen Bee.. 248
Searching for the Bee Tree 249
Selling Secrets 465
Starts Beekeeping 108
Strengthening a Weak Colony in Winter 175
Transferring Bees 110
Treating Sick People by Mail 675
Trouble with Express Companies 803
Value of Premiums..... 390
Water Witches 603
When Gleanings Was Printed by Power from Windmill 318